















[Original document](#)**BEST AVAILABLE COPY****METHOD OF DETECTING TOXIC SUBSTANCE**

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[less <<](#)[View INPADOC patent family](#)[Report a data error](#)**Abstract of WO03018792**

A method of detecting a toxic substance by a biological procedure. Namely, a toxic compound in a sample is detected by transforming cells by a vector containing a polynucleotide wherein a polynucleotide encoding a marker protein is ligated to the promoter of a specific yeast gene bringing test sample into contact with the transformed cells and then detecting the expression of mRNA encoding the marker protein.

A method of detecting a toxic substance by a biological procedure. Namely, a toxic compound in a sample is detected by transforming cells by a vector containing a polynucleotide wherein a polynucleotide encoding a marker protein is ligated to the promoter of a specific yeast gene; bringing the test sample into contact with the transformed cells; and then detecting the expression of mRNA encoding the marker protein.

Data supplied from the *esp@cenet* database - WorldwideDescription of corresponding document: **EP1426439****FILED OF THE INVENTION**

[0001] This invention relates to biology-based processes for detecting toxic substances. It also relates to polynucleotides, vectors, and cells as used for the processes.

BACKGROUND ART

[0002] Environmental chemical fate search has been conducted every year for 24 years from 1974 to 1998 by Environment Agency, and revealed that about 40% of 775 chemical substances that have been searched so far are emitted into the environment. Chemical substances that are industrially produced present in Japan are estimated about 50,000, and the production scale and the kinds of chemical substances are increasing year by year. It is known that chemical substances that are accidentally produced by waste treatment with chlorine and incineration pollute the environment. Although such facts allow us to predict that there are a large number of chemical substances that have been accumulated in the environment, it is extremely difficult to search and examine individually all the chemical substances.

[0003] Conventional bioassays (approaches to evaluate the harmful effects on biological materials on the basis of their responses) wherein inhibited growth and particular biological responses in individuals or cells of fishes, daphnia and shellfish are used as indicators make it possible to determine the presence or absence of the toxicity of chemical substances in the environment, but neither possible to evaluate the characters nor origins of the toxicity. The evaluation methods based on the activity of nitrite-forming bacteria or nitrate-forming bacteria (Japanese Patent Publication (kokai) No. 123705/ 1994, Japanese Patent Publication (kokai) No. 2000-206087) and the activity of iron bacteria have been proposed, and devices such as Acute toxicants monitor (Fuji Electric Corporate Research and Development, Ltd. Japan) are marketed. In foreign countries, the devices for evaluation based on emission intensity of luminous bacteria are commercially available (MICROTOX, azur, Co., USA; LUMIS, Dr. Lange, Co. Germany). However, those devices still involve conventional bioassays, and never provide any detailed information on toxic chemical substances.

[0004] In Japan, the risk control of chemical substances is reconsidered every time a chemical substance that causes pollution is newly found, and official regulations and self-imposed regulations are combined to organize the system for risk control. However, any system has not been yet organized that could quickly respond to the present complicated and diversified conditions including accidental productions and environmental emission of toxic chemical substances as typified by trihalomethane and dioxin. Animal experiments used in the method for evaluation of toxic substances of "Law Concerning Examination and Manufacture etc. of Chemical Substances" are expensive and time-consuming, and are not accepted across the world. Although, as such, the control system has been continuously discussed, it has not been successfully accomplished because there is no way to dissolve the problem. Thus, a method for detecting readily chemical substances occurring in the environment is desired.

DISCLOSURE OF THE INVENTION

[0005] The inventors of the present application found that a toxic substance activates the promoter of a particular yeast gene to induce the transcription of mRNA from the polynucleotide encoding a marker protein operably linked to the promoter, and accomplished the present invention.

[0006] Specifically, the invention of the present application relates, as the first embodiment, to a polynucleotide which comprises a polynucleotide sequence operably linked to a polynucleotide encoding a marker protein, wherein the polynucleotide sequence comprises a promoter from yeast genes that is selected from a group consisting of the following, or a promoter from a gene that is homologous to the yeast genes and is derived from other species; YBR072W, YCR102C, YCR107W, YDL218W, YDI107C, YDR453C, YDR533C, YFL014W, YFL056C, YFL057C, YGR110W, YJR155W, YKL071W, YKR076W, YLL060C, YLR460C, YMR090W, YNL331C, YNL332W, YNL335W, YOL150C, YOL165C, YPL171C, YPR167C, YBL048W, YBL064C, YBL107C, YBR008C, YBR173C, YBR217C, YBR296C, YDL021W, YFL022C, YFL024C, YFL061W, YGL121C, YGL158W, YGR043C, YHR112C, YHR139C, YHR179W, YHR209W, YIR030C, YJR010W, YJR048W, YKL001C, YKL002C, YKR075C, YKR097W, YLL056C, YLR297W, YLR303W, YML087C, YMR096W, YNL274C,

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YHR160C, YHR171W, YHR180W, YHR205W, YIL062C, YIL072W, YIL075C, YIL099W, YIL1
YIL165C, YIL170W, YIR009W, YIR018W, YIR031C, YIR032C, YJL032W, YJL049W, YJL128C
YJL165C, YJR044C, YJR052W, YJR090C, YJR091C, YJR103W, YJR104C, YJR153W, YKL059C
YKL079W, YKL090W, YKL094W, YKL192C, YKL209C, YKR052C, YKR102W, YKR106W,
YLL054C, YLR025W, YLR097C, YLR200W, YLR226W, YLR248W, YLR266C, YLR392C,
YLR427W, YML013W, YML029W, YML041C, YML051W, YML078W, YML079W, YML088W
YML099C, YMR056C, YMR068W, YMR091C, YMR110C, YMR160W, YMR186W, YMR255W
YNL005C, YNL026W, YNL039W, YNL063W, YNL064C, YNL077W, YNL083W, YNL147W,
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[0007] The base sequences and the amino acid sequences of the yeast genes are disclosed in public databases such as MIPS in Germany: Munich Information Center for Protein Sequence, and SGD in *Saccharomyces Genome Database*, and are known via the internet. The sequences of promoters are disclosed in a public database of SCPD: The Promoter Database of *Saccharomyces cerevisiae*.

[0008] In addition to the promoters from yeast genes as described above, promoters from a gene that homologous to the yeast genes and is derived from other species may be used in the invention. In this context, "a gene that is homologous to the yeast genes" means a gene that comprises a base sequence having a 50% or more, preferably 80% or more of the base sequences of yeast genes, wherein the base sequence encodes a protein having the same functions as the proteins encoded by the yeast genes.

[0009] A polynucleotide encoding a marker protein is operably linked to a polynucleotide of a promoter from the gene as described above so as to provide a polynucleotide construct. Processes to link a polynucleotide encoding a protein operably to a promoter is well known in the art. See, for example, Old, S. B. *Primrose Principles of Gene Manipulation* 5th Ed., BAIFUKAN CO., LTD, pp 138-165, 1996, 263, 2000.

[0010] Examples of marker proteins include GFP (Green Fluorescence Protein) (Heim, R., Cubitt, A and Tsien, R. Y. (1995) *Nature* 373, 663-664; Heim, R., Prasher DC. and Tsien, R. Y. (1994) *Proc. Natl. Acad. Sci.*, 91, 12501-12504; Warg, S. and Hazerigg, T. (1994) *Nature* 639, 400-403; Youvan, D.C. Michel-Beyerle, M.E. (1996) *Nature Biotechnology* 14 1219-1220; Chalfie, M., Tu, Y., Euskirchen, Ward, W. W. and Prasher, D.C. (1994) *Science* 263, 802-805), beta -galactosidase (Canestro C, Alb: Escriva H, Gonzalez-Duarte R. Endogenous beta-galactosidase activity in amphioxus: a useful histochemical marker for the digestive system. *Dev Genes Evol* 2001 Mar 211(3):154-6), luciferases (Toxicol 2002 Jun;76(5-6):257-61, Estrogenic activity of UV filters determined by an in vitro reporter assay and an in vivo transgenic zebrafish assay. Schreurs R, Lanser P, Seinen W, Van Der Burg B.), acetyltransferase (J Recept Signal Transduct Res 2001 Feb;21(1):71-84, A simplified method for large scale quantification of transcriptional activity and its use in studies of steroids and steroid receptors. Lu S, Lu J, Iyama K, Lo SC, Danielsen M.).

[0011] The present invention also relates to a vector that comprises a polynucleotide construct as described above.

[0012] A polynucleotide comprising a promoter sequence from yeast genes is obtained by preparing primer that transcribes a likely necessary portion on the basis of the base sequence of the yeast gene known in the public database, and amplifying the same by PCR using the genomic DNA of yeast as template. Further, a plasmid that is capable of replicating in an intended cell is selected, and a base sequence of a marker protein is introduced into the plasmid. The polynucleotide comprising a promoter sequence as shown above is inserted upstream the marker gene to obtain an intended vector.

[0013] The present invention also relates to a host cell that is transformed with the vector as described above. It is natural to use preferably human cells as a host cell, and cells from other mammalian such as mouse may be used. Also, cells from fishes, nematode or the like as used in bioassay so far may be used in view of environmental toxic evaluation. Further, it is preferred to use microbiological cells since cultivation of them are easy. It is more preferred to use yeast cells because the present method is based on the use of genes from yeast cells, and because yeast is grown irrespective of variable environmental conditions such as salt concentration. Transformation of cells are well known. For example, see Kaijima Michaelis S, Mitchell A: Lithium acetate yeast transformation, Methods in Yeast Genetics, A Cold Spring Harbor Laboratory Course Manual 1994 edition (Cold Spring Harbor Laboratory Press) pp.133-134. The purpose may be attained without vector when the encoding region of the yeast gene is replaced with a polynucleotide sequence encoding a marker protein. The polynucleotide construct can be directly introduced into cells, and the method therefore is also well known.

[0014] The invention also relates to a process for detecting a toxic compound in a test material, which comprises:

- (1) contacting the test material to the transformed cells as described above, and
- (2) detecting the expression of mRNA encoding a marker protein.

[0015] The step to contact a test material to a cell comprises for example culturing the transformed cells in a liquid at an appropriate condition for the cultivation of the cell, and adding the test material directly to the culture liquid.

[0016] Then, the expression level of a marker protein or a mRNA encoding the protein is determined.

[0017] The determination of the expression level of a marker protein may be conducted by destroying cells, obtaining an extract containing the protein, and determining the level of marker protein in the extract. For example, when a marker protein is GFP, the fluorescence level in the protein extract is determined with a spectrofluorometer. Also, even when the cells are not destroyed, it is possible to determine the expression level by observation and image processing with fluorescence microscopes and laser microscopes, determination with flow cytometry, and detection with evanescent lights.

[0018] The level of an expressed mRNA may be detected by 1) northern blotting (OGATA Nobukuni, NOJIMA Hiroshi: Genetic Engineering Keywords Book, revised 2nd ed., Yodosha, co.jp, 2000, pp230-231), 2) reverse transcription-PCR (RT-PCR) (NAKABEPPU Yusaku, et al.: Cell Technology, supplement series, Modified PCR Tips, Shujunsha Co.Ltd., 1999, pp25-43) and the like.

[0019] Procedures of northern blotting comprises electrophoresing the RNA, transferring the pattern to a filter, and hybridizing it with a specific probe labeled with an isotope, thereby analyzing the presence and the amount of mRNA in the sample as well as the length of the same. RT-PCR is a procedure for detection and quantitative determination of an intended RNA in a form of the amplified cDNA, which comprises forming cDNA from the RNA by reverse-transcription with reverse transcriptase, and conducting PCR using the cDNA as a starting material as well as specific primer sets and a thermostable DNA polymerase.

[0020] Toxic substances to be detected according to the present invention include, but are not limited to, Na₂As, CdCl₂, HgCl₂, PbCl₂, 4-nitroquinolin-N-oxide, 2,4,5-trichlorophenol, gamma-hexachlorocyclohexane, manganese ethylenebis(dithiocarbamate), 2,4,5,6-tetrachloro-1,3-

benzenedicarbonitrile, tetramethylthiuram disulfide, zinc N,N'-ethylenebis(dithiocarbamate), 8-methoxy-3,4-dihydro-2H-pyran-2-one, vanillyl-6-nonenamide, gingerol, acrolein, dimethylsulfoxide, Roundup (trademark, herbicide) (N-(phosphomethyl) glycinate ammonium 41.0%, surfactant 59.0%), sodium dodecylbenzenesulfonate, sodium lauryl sulfate, 2,4-dichlorophenoxyacetic acid, potassium cyanide, benzo(a)pyrene, formaldehyde, bisphenol-A, 2,5-dichlorophenol, methylmercury chloride, p-nonylphenol, pentachlorophenol, nickel chloride, potassium bichromate, triphenyltin chloride, phenol, S-4-chlorobenzyl-N,N-diethylcarbamate, hexachlorophene, triclosan, and copper sulfate.

[0021] When the method as described above is conducted using two or more cells, both of which are transformed with a vector comprising a polynucleotide of a promoter from different yeast genes operably linked to a polynucleotide encoding a marker protein, then toxic substances can be further examined. For example, as shown in the working examples hereinafter, YLL057C can be used as a yeast gene promoter to detect 2,4-dichlorophenoxyacetic acid, arsenious acid or a salt thereof, cadmium salt, and cyanide or a salt thereof, and YLR303W can be used as a yeast gene promoter to detect 2,4-dichlorophenoxyacetic acid, arsenious acid or a salt thereof, cadmium salt, cyanide or a salt thereof, benzo(a)pyrene, formaldehyde, manganese ethylenebis (dithiocarbamate), and a mercuric salt. Accordingly, when for example the expression of a marker protein is induced by using YLR303W as yeast gene, and not induced by YLL057C, then toxic substances are identified as benzo(a)pyrene, mercuric salt, manganese ethylenebis (dithiocarbamate) or formaldehyde. When the expression of a marker protein is induced by using both yeast genes, then toxic substances are identified as 2,4-dichlorophenoxyacetic acid, arsenious acid or a salt thereof, cadmium salt, or cyanide or a salt thereof.

[0022] The following examples are presented for purpose of further illustration of the invention, and examples are not intended to be limiting the invention in any respect.

EXAMPLES

Example 1

[0023] The following experiment was conducted to examine which yeast gene is useful for the detection of a toxic substance.

[0024] Yeast (*Saccharomyces cerevisiae* S288C (a SUC2mal1 mel1 gap2 CUP1)) were cultured at 25°C on YPD medium (yeast extract 1%, polypepton 2%, glucose 2%). One of toxic chemical substances was added to the cell at logarithmic growth phase, and the cell was further cultured for two hours. Cell was cultured without any chemical substance in the same condition, and was used as control. Concentrations of the chemical substances were defined to inhibit the growth of the yeast but not lead to death.

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<table>Head Col 1 to 2 AL=L: Chemical Substances

<table>Head Col 3: Concentrations

<table>(1)<td>Na2As<td>0.3mM

<table>(2)<td>CdCl2<td>0.3mM

<table>(3)<td>HgCl2<td>0.7mM

<table>(4)<td>PbCl2<td>2mM

<table>(5)<td>4-nitroquinolin-N-oxide<td>0.2 mu M

<table>(6)<td>2,4,5-trichlorophenol<td>16 mu M

<table>(7)<td>gamma -hexachlorocyclohexane<td>1.3mM

<table>(8)<td>manganese ethylenebis(dithiocarbamate)<td>2ppm

<table>(9)<td>2,4,5,6-tetrachloro-1,3- benzenedicarbonitrile<td>10 mu M

<table>(10)<td>Tetramethylthiuram disulfide<td>75 mu M

<tb>(11)<SEP>zinc N,N'-ethylenebis(dithiocarbamate)<SEP>2ppm
 <tb>(12)<SEP>8-methyl-N-vanillyl-6-nonenamide 0.82mM
 <tb>(13)<SEP>gingerol<SEP>1.36mM
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 <tb>(15)<SEP>dimethylsulfoxide<SEP>1.41 M
 <tb>(16)<SEP>Roundup (trademark, herbicide)
 <1)>
 <SEP>1500-fold dilution
 <tb>(17)<SEP>sodium dodecylbenzosulfonate<SEP>0.02%
 <tb>(18)<SEP>sodium lauryl sulfate<SEP>0.01%
 1) N- (phosphomethyl) glycinate ammonium 41.0%, surfactant 59.0%

<tb></TABLE>

[0025] After the completion of cultivation, the culture was centrifuged to collect the cells. To the cell suspension, sodium acetate buffer (50mM sodium acetate, 10mM EDTA, 1% SDS) was added, and the mixture was shaken at 65 DEG C for five minutes, followed by returning to room temperature, and obtaining the supernatant, which procedure was repeated two times. To the supernatant, 1/2 amount of a solution of phenol/chloroform was added, and the mixture was centrifuged to give a supernatant, which was added with an equal amount of chloroform, and the mixture was centrifuged to give a supernatant. To the supernatant, an equal amount of isopropanol containing 0.3 M sodium acetate was added, and the mixture was allowed to stand at room temperature for 30 minutes, after which the mixture was centrifuged to collect the sediment of the whole RNAs. Seventy % ethanol was added to the sediment, and the mixture was again centrifuged to give a sediment, which was then dried and dissolved in water. mRNA was isolated from the whole RNAs as followings. In view of the fact that a poly A chain is attached to the 3' terminus of mRNA, a polynucleotide having a poly T structure which was immobilized on the surface of latex beads was used to trap the mRNA, and then the mRNA was washed and eluted with spin column (Oligotex-dT30<Super>mRNA Purification Kit, Takara). Reverse transcription of the mRNA was conducted with reverse transcriptase (Super Script II Reverse Transcriptase; catalogue No. 18064-014, GibcoBRL) and fluorescence-labeled nucleotides to give cDNAs that were introduced with Cy3-dUTP or Cy5-dUTP during the reverse transcription.

[0026] The labeled cDNAs were dissolved in TE buffer (10mM Tris-HCl/1mM EDTA, pH8.0), and the solution was dropped on the DNA chip containing the whole genes of yeast (DNA Chip Research Institute, Japan) so that the cDNAs were hybridized on the DNA chip at 65 DEG C for over 12 hours. The fluorescence intensity of the DNA chip was read with a scanner, and the ratio relative to the fluorescence intensity resulting from the absence of chemical substance was estimated as the following, which is shown in Tables 1 to 9:

The level of expressed mRNA in the presence of chemical substance DIVIDED The level of expressed mRNA in the absence of chemical substance

In the Tables, "Intensity" indicated in the rightmost column is a value of the level of expressed mRNA for each gene in control cells as divided by the average level of the expressions of the whole genes. A gene which mRNA level is lower in control, and is higher in cases of addition of chemical substance, is especially useful in the detection of toxic substances.

EMI26.1

EMI27.1

EMI28.1

EMI29.1

EMI30.1

EMI31.1

EMI32.1

EMI33.1

EMI34.1

EMI35.1

EMI36.1

EMI37.1

EMI38.1

EMI39.1

EMI40.1

EMI41.1

EMI42.1

EMI43.1

EMI44.1

EMI45.1

EMI46.1

EMI47.1

EMI48.1

EMI49.1

EMI50.1

EMI51.1

EMI52.1

EMI53.1

EMI54.1

EMI55.1

EMI56.1

EMI57.1

EMI58.1

EMI59.1

EMI60.1

EMI61.1

EMI62.1

EMI63.1

EMI64.1

EMI65.1

EMI66.1

EMI67.1

EMI68.1

EMI69.1

EMI70.1

EMI71.1

EMI72.1

EMI73.1

EMI74.1

EMI75.1

EMI76.1

EMI77.1

EMI78.1

EMI79.1

EMI80.1

EMI81.1

EMI82.1

EMI83.1

EMI84.1

EMI85.1

EMI86.1

EMI87.1

EMI88.1

EMI89.1

EMI90.1

EMI91.1

EMI92.1

EMI93.1

EMI94.1

EMI95.1

EMI96.1

EMI97.1

EMI98.1

EMI99.1

EMI100.1

EMI101.1

EMI102.1

EMI103.1

EMI104.1

EMI105.1

[0027] The tables show that the expressed mRNA of about 700 of 2400 unknown yeast genes was induced by any one of chemical substances such as heavy metals, agricultural chemicals, surfactants (Table 1) as well as the expressed mRNA of 167 mitochondria-located genes (Table 2), 52 DNA repair genes (Table 3), 161 energy genes (Table 4), 142 transport facilitation protein genes (Table 5), 90 stress protein genes (Table 6), 142 metabolism genes (Table 7), 60 detoxification genes (Table 8), and 507 genes belong to other category (Table 9). Here, when the value of the following is 2 or more, then it is considered significant:

The level of expressed mRNA in the presence of chemical substance DIVIDED The level of expressed mRNA in the absence of chemical substance.

[0028] The inventors of the present application understood that the induction of certain yeast genes by toxic substances is caused by the activation of the promoters of the genes by the toxic substances. Therefore, the inventors prepared a vector that comprised a polynucleotide sequence comprising the promoter of a yeast gene, which sequence is operably linked to a polynucleotide encoding a marker protein; and

transformed yeast cells with the vector. Such cells enable us to detect readily toxic substances by detecting the expressed marker proteins (hereinafter, such detection may be referred to as "promoter assay"). Working examples hereinafter illustrate the preparation of such vectors, transformation of yeast cells of said vectors, and the detection of toxic substances by use of the transformed cells.

[0029] Promoter assay is a method for determining variations of the level of intracellular genes without destroying cells on the basis of the level of expressed marker genes instead of the expressed mRNA. A gene selected to detect a chemical substance is expressed in the absence of chemical substances, and marker protein also occurs in the absence of chemical substances. In the method according to the present invention, the behavior of yeast genes on the addition of test materials is determined on the basis of the level of expressed marker protein so that the presence or the absence, and the kind of toxic chemical substances are predicted. Thus, it is desired that the production of marker proteins is lower in the absence of chemical substances, and the production of marker proteins is higher in the presence of chemical substances. Under the circumstance, yeast gene as used in promoter assay is selected, of which intensity (level of expressed gene in control cells/average level of expressed whole genes) is preferably 1.5 or more preferably 1 or less, even more preferably 0.5 or less, and of which expression magnification (expressed mRNA in the presence of chemical substance/expressed mRNA in the absence of chemical substance) is preferably 3 or more, more preferably 10 or more, even more preferably 20 or more.

Example 2

[0030] Primers for PCR to amplify the polynucleotide comprising the promoter of yeast gene YKL0 were prepared. Primers were designed using a primer design software, Oligo4.0-S, Sequencher I Mackintosh version. The base sequence of the upper primer was:

EMI108.1

whereas the base sequence of the lower primer was:

EMI108.2

For PCR, yeast chromosome (*Saccharomyces cerevisiae* S288C, Cat.40802, Research Genetics, Inc.) was used as template, and the commercially available kit (KOD DNA Polymerase; Code KOD-101, Toyobo) was used as reagents.

[0031] Type YEp shuttle vector pYES2 (pYES2, Cat no: V825-20, Invitrogen Corporation, USA), which can be replicated both in *E. coli* and yeast was used as vector (R. W. Old, S. B. Primrose Principles of Gene Manipulation 5th Ed., BAIFUKAN CO., LTD, pp138-165, pp.234-263, 2000). The portion of pQBI 63 (Cat no.54-0082, Wako Pure Chemical Industries, Ltd.) corresponding to a marker protein was used as the polynucleotide encoding GFP (SEQ ID No: 6). First, the GFP polynucleotide was inserted into the multiple cloning sites of pYES2 to give a vector. Thereafter, the GAL1 promoter of pYES2 was replaced with the polynucleotide comprising the promoter sequence of the intended yeast gene YKL (SEQ ID No: 1) to give an intended plasmid vector. Suitable restriction enzymes were selected, and insertion of the polynucleotide comprising GFP and the promoter sequence was conducted.

[0032] Next, the yeast *Saccharomyces cerevisiae* W303 was transformed with the resultant plasmid according to the following procedures:

- 1) Incubating the yeast *Saccharomyces cerevisiae* W303 in 200 ml of SD medium under shaking until OD₆₆₀ reaches 0.5;
- 2) Suspending the collected cells in 5ml of TE-buffer;
- 3) Adding 250 μ l of 2.5M lithium acetate;
- 4) Dispensing each 300 μ l, adding 10 μ l of above plasmid vector thereto, then incubating the suspensions at 30 DEG C for 30 minutes;
- 5) Adding 700 μ l of 50% PEG4000, and incubating the mixture under shaking at 30 DEG C for 60 minutes;
- 6) Giving heat shock (42 DEG C, 5 minutes), and then immediately cooling the mixture;

- 7) Washing the mixture twice with 1M sorbitol; and
- 8) Seeding it on agar plates made of minimum essential medium.

[0033] The transformations were confirmed on selective medium (SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan))). Colonies that were grown on agar plate of selective medium were further checked for auxotrophy for amino acids.

[0034] The transformed yeast cells named SC-YKL071w-pQBI has been deposited as the International Deposit at National Institute of Advanced Industrial Science and Technology, International Patent Organism Depository of Tsukuba Central 6, 1-1-1 Higashi, Tsukuba, Ibaraki, Japan under Accession Number FERM BP-8161 on August 19, 2002.

Example 3

[0035] Primers for PCR to amplify the polynucleotide comprising the promoter of yeast gene YCR1 were prepared. Primers were designed using a primer design software, Oligo4.0-S, Sequencher I for Macintosh version. The base sequence of the upper primer was:

EMI110.1

whereas the base sequence of the lower primer was:

EMI110.2

For PCR, yeast chromosome (*Saccharomyces cerevisiae* S288C, Cat.40802, Research Genetics, Inc.) was used as template, and the commercially available kit (KOD DNA Polymerase; Code KOD-101, Toyobo) was used as reagents.

[0036] Type YEp shuttle vector pYES2 (pYES2, Cat no: V825-20, Invitrogen Corporation, USA), which can be replicated both in *E. coli* and yeast was used as vector (R. W. Old, S. B. Primrose Principles of Gene Manipulation 5th Ed., BAIFUKAN CO., LTD, pp138-165, pp.234-263, 2000). The portion of pQBI 63 (Cat no.54-0082, Wako Pure Chemical Industries, Ltd.) corresponding to a marker protein was used as the polynucleotide encoding GFP (SEQ ID No: 6). First, the GFP polynucleotide was inserted into the multiple cloning sites of pYES2 to give a vector. Thereafter, the GAL1 promoter of pYES2 was replaced with the polynucleotide comprising the promoter sequence of the intended yeast gene YCR1 (SEQ ID No: 2) to give an intended plasmid vector. Suitable restriction enzymes were selected, and insertion of the polynucleotide comprising GFP and the promoter sequence was conducted.

[0037] Next, the yeast *Saccharomyces cerevisiae* W303 was transformed with the resultant plasmid according to the following procedures:

- 1) Incubating the yeast *Saccharomyces cerevisiae* W303 in 200 ml of SD medium under shaking until OD₆₆₀ reaches 0.5;
- 2) Suspending the collected cells in 5ml of TE-buffer;
- 3) Adding 250 μ l of 2.5M lithium acetate;
- 4) Dispensing each 300 μ l, adding 10 μ l of above plasmid vector thereto, then incubating the suspensions at 30 DEG C for 30 minutes;
- 5) Adding 700 μ l of 50% PEG4000, and incubating the mixture under shaking at 30 DEG C for 60 minutes;
- 6) Giving heat shock (42 DEG C, 5 minutes), and then immediately cooling the mixture;
- 7) Washing the mixture twice with 1M sorbitol; and
- 8) Seeding it on agar plates made of minimum essential medium.

[0038] The transformations were confirmed on selective medium (SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan))). Colonies

that were grown on agar plate of selective medium were further checked for auxotrophy for amino a

[0039] The transformed yeast cells named SC-YCR102c-pQBI has been deposited as the International Patent Deposit at National Institute of Advanced Industrial Science and Technology, International Patent Organism Depository of Tsukuba Central 6, 1-1-1 Higashi, Tsukuba, Ibaraki, Japan under Accession Number FERM BP-8159 on August 19, 2002.

Example 4

[0040] Primers for PCR to amplify the polynucleotide comprising the promoter of yeast gene YOR3 were prepared. Primers were designed using a primer design software, Oligo4.0-S, Sequencher I for Macintosh version. The base sequence of the upper primer was:

EMI112.1

whereas the base sequence of the lower primer was:

EMI112.2

For PCR, yeast chromosome (*Saccharomyces cerevisiae* S288C, Cat.40802, Research Genetics, Inc.) was used as template, and the commercially available kit (KOD DNA Polymerase; Code KOD-101, Toyobo Co.) was used as reagents.

[0041] Type YEp shuttle vector pYES2 (pYES2, Cat no: V825-20, Invitrogen Corporation, USA), which can be replicated both in *E. coli* and yeast was used as vector (R. W. Old, S. B. Primrose Principles of Gene Manipulation 5th Ed., BAIFUKAN CO., LTD, pp 138-165, pp.234-263, 2000). The portion of pQBI 63 (Cat no.54-0082, Wako Pure Chemical Industries, Ltd.) corresponding to a marker protein was used as the polynucleotide encoding GFP (SEQ ID No: 6). First, the GFP polynucleotide was inserted into the multiple cloning sites of pYES2 to give a vector. Thereafter, the GAL1 promoter of pYES2 was replaced with the polynucleotide comprising the promoter sequence of the intended yeast gene YOR3 (SEQ ID No: 3) to give an intended plasmid vector. Suitable restriction enzymes were selected, and insertion of the polynucleotide comprising GFP and the promoter sequence was conducted.

[0042] Next, the yeast *Saccharomyces cerevisiae* W303 was transformed with the resultant plasmid according to the following procedures:

- 1) Incubating the yeast *Saccharomyces cerevisiae* W303 in 200 ml of SD medium under shaking until OD₆₀₀ reaches 0.5;
- 2) Suspending the collected cells in 5ml of TE-buffer;
- 3) Adding 250 μ l of 2.5M lithium acetate;
- 4) Dispensing each 300 μ l, adding 10 μ l of above plasmid vector thereto, then incubating the suspensions at 30 DEG C for 30 minutes;
- 5) Adding 700 μ l of 50% PEG4000, and incubating the mixture under shaking at 30 DEG C for 60 minutes;
- 6) Giving heat shock (42 DEG C, 5 minutes), and then immediately cooling the mixture;
- 7) Washing the mixture twice with 1M sorbitol; and
- 8) Seeding it on agar plates made of minimum essential medium.

[0043] The transformations were confirmed on selective medium (SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan))). Cells that were grown on agar plate of selective medium were further checked for auxotrophy for amino a

[0044] The transformed yeast cells named SC-YOR382W-pQBI has been deposited as the International Patent Deposit at National Institute of Advanced Industrial Science and Technology, International Patent Organism Depository of Tsukuba Central 6, 1-1-1 Higashi, Tsukuba, Ibaraki, Japan under Accession Number FERM BP-8160 on August 19, 2002.

Example 5

[0045] Primers for PCR to amplify the polynucleotide comprising the promoter of yeast gene YLL0 were prepared. Primers were designed using a primer design software, Oligo4.0-S, Sequencher I Mackintosh version. The base sequence of the upper primer was:

EMI114.1

whereas the base sequence of the lower primer was:

EMI114.2

For PCR, yeast chromosome (*Saccharomyces cerevisiae* S288C, Cat.40802, Research Genetics, Inc. used as template, and the commercially available kit (KOD DNA Polymerase; Code KOD-101, Toy was used as reagents.

[0046] Type YEp shuttle vector pYES2 (pYES2, Cat no: V825-20, Invitrogen Corporation, USA), which can be replicated both in *E.coli.* and yeast was used as vector (R. W. Old, S. B. Primrose Principles of Gene Manipulation 5th Ed., BAIFUKAN CO., LTD, pp 138-165, pp.234-263, 2000). The portion of pQBI 63 (Cat no.54-0082, Wako Pure Chemical Industries, Ltd.) corresponding to a marker protein was used as the polynucleotide encoding GFP (SEQ ID No: 6). First, the GFP polynucleotide was inserted into the multiple cloning sites of pYES2 to give a vector. Thereafter, the GAL1 promoter of pYES2 was replaced with the polynucleotide comprising the promoter sequence of the intended yeast gene YLL0 (SEQ ID No: 4) to give an intended plasmid vector. Suitable restriction enzymes were selected, and insertion of the polynucleotide comprising GFP and the promoter sequence was conducted.

[0047] Next, the yeast *Saccharomyces cerevisiae* W303 was transformed with the resultant plasmid according to the following procedures:

- 1) Incubating the yeast *Saccharomyces cerevisiae* W303 in 200 ml of SD medium under shaking until OD₆₆₀ reaches 0.5;
- 2) Suspending the collected cells in 5ml of TE-buffer;
- 3) Adding 250 μ l of 2.5M lithium acetate;
- 4) Dispensing each 300 μ l, adding 10 μ l of above plasmid vector thereto, then incubating the suspensions at 30 DEG C for 30 minutes;
- 5) Adding 700 μ l of 50% PEG4000, and incubating the mixture under shaking at 30 DEG C for 60 minutes;
- 6) Giving heat shock (42 DEG C, 5 minutes), and then immediately cooling the mixture;
- 7) Washing the mixture twice with 1M sorbitol; and
- 8) Seeding it on agar plates made of minimum essential medium.

[0048] The transformations were confirmed on selective medium (SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan)). Colonies that were grown on agar plate of selective medium were further checked for auxotrophy for amino acids.

[0049] The transformed yeast cells named SC-YLL057C-pQBI were deposited at National Institute of Advanced Industrial Science and Technology, International Patent Organism Depository of Tsukuba Central 6, 1-1-1 Higashi, Tsukuba, Ibaraki, Japan under Accession No. PERM P-18439 on July 27, 2002, and then transferred into the International Deposit under Budapest Treaty as PERM BP-8158 on July 19, 2002.

Example 6

[0050] Primers for PCR to amplify the polynucleotide comprising the promoter of yeast gene YLR3 were prepared. Primers were designed using a primer design software, Oligo4.0-S, Sequencher I Mackintosh version. The base sequence of the upper primer was:

EMI116.1

whereas the base sequence of the lower primer was:

EMI116.2

For PCR, yeast chromosome (*Saccharomyces cerevisiae* S288C, Cat.40802, Research Genetics, Inc. used as template, and the commercially available kit (KOD DNA Polymerase; Code KOD-101, Toy was used as reagents.

[0051] Type YEp shuttle vector pYES2 (pYES2, Cat no: V825-20, Invitrogen Corporation, USA), which can be replicated both in *E. coli* and yeast was used as vector (R. W. Old, S. B. Primrose Principles of Gene Manipulation 5th Ed., BAIFUKAN CO., LTD, pp138-165, pp.234-263, 2000). The portion of pQBI 63 (Cat no.54-0082, Wako Pure Chemical Industries, Ltd.) corresponding to a marker protein was used as the polynucleotide encoding GFP (SEQ ID No: 6). First, the GFP polynucleotide was inserted into the multiple cloning sites of pYES2 to give a vector. Thereafter, the GAL1 promoter of pYES2 was replaced with the polynucleotide comprising the promoter sequence of the intended yeast gene YLR (SEQ ID No: 5) to give an intended plasmid vector. Suitable restriction enzymes were selected, and insertion of the polynucleotide comprising GFP and the promoter sequence was conducted.

[0052] Next, the yeast *Saccharomyces cerevisiae* W303 was transformed with the resultant plasmid according to the following procedures:

- 1) Incubating the yeast *Saccharomyces cerevisiae* W303 in 200 ml of SD medium under shaking until OD₆₆₀ reaches 0.5;
- 2) Suspending the collected cells in 5ml of TE-buffer;
- 3) Adding 250 μ l of 2.5M lithium acetate;
- 4) Dispensing each 300 μ l, adding 10 μ l of above plasmid vector thereto, then incubating the suspensions at 30 DEG C for 30 minutes;
- 5) Adding 700 μ l of 50% PEG4000, and incubating the mixture under shaking at 30 DEG C for 60 minutes;
- 6) Giving heat shock (42 DEG C, 5 minutes), and then immediately cooling the mixture;
- 7) Washing the mixture twice with 1M sorbitol; and
- 8) Seeding it on agar plates made of minimum essential medium.

[0053] The transformations were confirmed on selective medium (SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan)). Colonies that were grown on agar plate of selective medium were further checked for auxotrophy for amino acids.

[0054] The transformed yeast cells named SC-YLR303W-pQBI were deposited at National Institute of Advanced Industrial Science and Technology, International Patent Organism Depository of Tsukuba Central 6, 1-1-1 Higashi, Tsukuba, Ibaraki, Japan under Accession No. FERM P-18438 on July 27, 2001, and then transferred into the International Deposit under Budapest Treaty as FERM BP-8157 on July 19, 2002.

Example 7

[0055] The cells of SC-YKL071W-pQBI as prepared in Example 2 were contacted to one of the following compounds. The yeast cells SC-YKL071W-pQBI were incubated at 25 DEG C in SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan)). One of toxic chemical substances as shown below was added to the cells at logarithmic growth phase, and then the cells were further incubated for two hours. Cells were incubated without

chemical substance in the same condition, and was used as control.

(1) benzo(a)pyrene, (2) bisphenol-A, (3) (2-ethylhexyl)phthalate, (4) 2,5-dichlorophenol, (5) 2,4-dichlorophenoxyacetic acid, (6) formaldehyde, (7) methylmercury chloride, (8) 4-nitroquinolin-N-oxide, (9) p-nonylphenol, (10) pentachlorophenol, (11) sodium arsenite, (12) Tetramethylthiuram disulfide, tributyltin chloride, (14) 2,4,5-trichlorophenol, (15) Trp-P-2 (acetate), (16) paraquat, (17) cadmium chloride, (18) gamma -hexachlorocyclohexane, (19) malathion, (20) manganese ethylenebis (dithiocarbamate), (21) nickel (II) chloride, (22) potassium bichromate, (23) triphenyltin chloride, (24) phenol, (25) S-4-Chlorobenzyl-N,N-diethylthiocarbamate, (26) hexachlorophene, (27) triclosan, (28) mercury(II) chloride, (29) copper sulfate (II), (30) potassium cyanide, and (31) dimethylsulfoxide.

[0056] After contacted, the yeast cells were washed once with physiological saline, and then immobilized with a physiological saline containing 5% formalin, after which the fluorescence was determined by cytometry (EPICS XL: BECKMAN COULTER). Fluorometric range of the control was first defined. When the number of the cells having a higher fluorescence than the control was under 1%, "-" was indicated as not showing any fluorescence, whereas when the number was between 1% and 2%, and more, then "+" and "++" were indicated as showing a fluorescence, respectively. The results are shown in Table 10.

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<tb>(30)<SEP>potassium cyanide<SEP>16.7 mM<SEP>-

<tb>(31)<SEP>dimethylsulfoxide<SEP>3.7 %<SEP>-

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[0057] Table 10 shows that tetramethylthiuram disulfide induced the expression of GFP.

Example 8

[0058] The cells of SC-YCR102C-pQBI as prepared in Example 3 were contacted to one of the following compounds. The yeast cells SC-YCR102C-pQBI were incubated at 25 DEG C in SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan)). One of toxic chemical substances as shown below was added to the cells at logarithmic growth phase, and then the cells were further incubated for two hours. Cells were incubated without chemical substance in the same condition, and was used as control.

(1) benzo(a)pyrene, (2) bisphenol-A, (3) (2-ethylhexyl)phthalate, (4) 2,5-dichlorophenol, (5) 2,4-dichlorophenoxyacetic acid, (6) formaldehyde, (7) methylmercury chloride, (8) 4-nitroquinolin-N-oxide, (9) p-nonylphenol, (10) pentachlorophenol, (11) sodium arsenite, (12) Tetramethylthiuram disulfide, tributyltin chloride, (14) 2,4,5-trichlorophenol, (15) Trp-P-2 (acetate), (16) paraquat, (17) cadmium chloride, (18) gamma-hexachlorocyclohexane, (19) malathion, (20) manganese ethylenebis (dithiocarbamate), (21) nickel (II) chloride, (22) potassium bichromate, (23) triphenyltin chloride, (24) phenol, (25) S-4-Chlorobenzyl-N,N-diethylthiocarbamate, (26) hexachlorophene, (27) triclosan, (28) mercury(II) chloride, (29) copper sulfate (II), (30) potassium cyanide, and (31) dimethylsulfoxide.

[0059] After contacted, the yeast cells were washed once with physiological saline, and then immobilized with a physiological saline containing 5% formalin, after which the fluorescence was determined by cytometry (EPICS XL: BECKMAN COULTER). Fluorometric range of the control was first defined. When the number of the cells having a higher fluorescence than the control was under 1%, "-" was indicated as not showing any fluorescence, whereas when the number was between 1% and 2%, and more, then "+" and "++" were indicated as showing a fluorescence, respectively. The results are shown in Table 11.

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<tbl>	Head	Col 4:	Fluorescence

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<tbl>	(2)<SEP>	bisphenol-A<SEP>	0.4 mM<SEP>-
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<tbl>	(14)<SEP>	2,4,5-trichlorophenol<SEP>	30 mM<SEP>-
<tbl>	(15)<SEP>	Trp-P-2 (acetate)<SEP>	0.2 mM<SEP>-
<tbl>	(16)<SEP>	paraquat<SEP>	16.7 mM<SEP>-
<tbl>	(17)<SEP>	cadmium chloride<SEP>	40 mu M<SEP>-
<tbl>	(18)<SEP>	gamma-hexachlorocyclohexane<SEP>	6.7 mM<SEP>-
<tbl>	(19)<SEP>	malathion<SEP>	22.2 mM<SEP>-
<tbl>	(20)<SEP>	manganese ethylenebis (dithiocarbamate)<SEP>	0.8 mM<SEP>-
<tbl>	(21)<SEP>	nickel (II) chloride<SEP>	3.3 mM<SEP>-
<tbl>	(22)<SEP>	potassium bichromate<SEP>	0.3 mM<SEP>-


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<tb>(23)<SEP>triphenyltin chloride<SEP>10 mu M<SEP>-
<tb>(24)<SEP>phenol<SEP>5.6 mM<SEP>-
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<tb>(26)<SEP>hexachlorophene<SEP>30 mu M<SEP>-
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<tb>(30)<SEP>potassium cyanide<SEP>16.7 mM<SEP>-
<tb>(31)<SEP>dimethylsulfoxide<SEP>3.7 %<SEP>-
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```

[0060] Table 11 shows that tetramethylthiuram disulfide induced the expression of GFP.

Example 9

[0061] The cells of SC-YOR382W-pQBI as prepared in Example 4 were contacted to one of the following compounds. The yeast cells SC-YOR382W-pQBI were incubated at 25 DEG C in SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan)). One of toxic chemical substances as shown below was added to the cells at logarithmic growth phase, and then the cells were further incubated for two hours. Cells were incubated without chemical substance in the same condition, and was used as control.

(1) benzo(a)pyrene, (2) bisphenol-A, (3) (2-ethylhexyl)phthalate, (4) 2,5-dichlorophenol, (5) 2,4-dichlorophenoxyacetic acid, (6) formaldehyde, (7) methylmercury chloride, (8) 4-nitroquinolin-N-oxide, (9) p-nonylphenol, (10) pentachlorophenol, (11) sodium arsenite, (12) Tetramethylthiuram disulfide, tributyltin chloride, (14) 2,4,5-trichlorophenol, (15) Trp-P-2 (acetate), (16) paraquat, (17) cadmium chloride, (18) gamma-hexachlorocyclohexane, (19) malathion, (20) manganese ethylenebis (dithiocarbamate), (21) nickel (II) chloride, (22) potassium bichromate, (23) triphenyltin chloride, (24) phenol, (25) S-4-Chlorobenzyl-N,N-diethylthiocarbamate, (26) hexachlorophene, (27) triclosan, (28) mercury(II) chloride, (29) copper sulfate (II), (30) potassium cyanide, and (31) dimethylsulfoxide.

[0062] After contacted, the yeast cells were washed once with physiological saline, and then immobilized with a physiological saline containing 5% formalin, after which the fluorescence was determined by flow cytometry (EPICS XL: BECKMAN COULTER). Fluorometric range of the control was first defined. When the number of the cells having a higher fluorescence than the control was under 1%, "-" was indicated as not showing any fluorescence, whereas when the number was between 1% and 2%, and more, then "+" and "++" were indicated as showing a fluorescence, respectively. The results are shown in Table 12.

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<tb>Head Col 3: Concentrations
<tb>Head Col 4: Fluorescence
<tb>(1)<SEP>benzo(a)pyrene<SEP>0.2 mM<SEP>-
<tb>(2)<SEP>bisphenol-A<SEP>0.4 mM<SEP>-
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<tb>(6)<SEP>formaldehyde<SEP>0.2 mM<SEP>-
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<tb>(8)<SEP>4-nitroquinolin-N-oxide<SEP>0.6 mu M<SEP>++
<tb>(9)<SEP>p-nonylphenol<SEP>10 mu M<SEP>++
<tb>(10)<SEP>pentachlorophenol<SEP>50 mu M<SEP>-
<tb>(11)<SEP>sodium arsenite<SEP>0.3 mM<SEP>-

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<tb>(12)<SEP>Tetramethylthiuram disulfide<SEP>20 mu M<SEP>-
<tb>(13)<SEP>tributyltin chloride<SEP>0.4 mu M<SEP>-
<tb>(14)<SEP>2,4,5-trichlorophenol<SEP>30 mM<SEP>++
<tb>(15)<SEP>Trp-P-2 (acetate)<SEP>0.2 mM<SEP>++
<tb>(16)<SEP>paraquat<SEP>16.7 mM<SEP>-
<tb>(17)<SEP>cadmium chloride<SEP>40 mu M<SEP>-
<tb>(18)<SEP> gamma -hexachlorocyclohexane<SEP>6.7 mM<SEP>-
<tb>(19)<SEP>malathion<SEP>22.2 mM<SEP>++
<tb>(20)<SEP>manganese ethylenebis (dithiocarbamate)<SEP>0.8 mM<SEP>++
<tb>(21)<SEP>nickel (II) chloride<SEP>3.3 mM<SEP>++
<tb>(22)<SEP>potassium bichromate<SEP>0.3 mM<SEP>++
<tb>(23)<SEP>triphenyltin chloride<SEP>10 mu M<SEP>-
<tb>(24)<SEP>phenol<SEP>5.6 mM<SEP>++
<tb>(25)<SEP>S-4-Chlorobenzyl-N,N-diethylthiocarbamate<SEP>0.7 mM<SEP>-
<tb>(26)<SEP>hexachlorophene<SEP>30 mu M<SEP>-
<tb>(27)<SEP>triclosan<SEP>730 mu M<SEP>-
<tb>(28)<SEP>mercury(II) chloride<SEP>50 mu M<SEP>-
<tb>(29)<SEP>copper sulfate (II)<SEP>3.3 mM<SEP>-
<tb>(30)<SEP>potassium cyanide<SEP>16.7 mM<SEP>-
<tb>(31)<SEP>dimethylsulfoxide<SEP>3.7 %<SEP>++
<tb></TABLE>

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[0063] Table 12 shows that 2,4-dichlorophenoxyacetic acid, 4-nitroquinolin-N-oxide, p-nonylphenol, 2,4,5-trichlorophenol, Trp-P-2 (acetate), malathion, manganese ethylenebis(dithiocarbamate), nickel chloride, potassium bichromate, phenol, and dimethylsulfoxide induced the expression of GFP.

Example 10

[0064] The cells of SC-YLL057C-pQBI as prepared in Example 5 were contacted to one of the following compounds. The yeast cells SC-YLL057C-pQBI were incubated at 25 DEG C in SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan)). One of toxic chemical substances as shown below was added to the cells at logarithmic growth phase, and then the cells were further incubated for two hours. Cells were incubated without chemical substance in the same condition, and was used as control.

(1) benzo(a)pyrene, (2) bisphenol-A, (3) (2-ethylhexyl)phthalate, (4) 2,5-dichlorophenol, (5) 2,4-dichlorophenoxyacetic acid, (6) formaldehyde, (7) methylmercury chloride, (8) 4-nitroquinolin-N-oxide, (9) p-nonylphenol, (10) pentachlorophenol, (11) sodium arsenite, (12) Tetramethylthiuram disulfide, tributyltin chloride, (14) 2,4,5-trichlorophenol, (15) Trp-P-2 (acetate), (16) paraquat, (17) cadmium chloride, (18) gamma -hexachlorocyclohexane, (19) malathion, (20) manganese ethylenebis (dithiocarbamate), (21) nickel (II) chloride, (22) potassium bichromate, (23) triphenyltin chloride, (24) phenol, (25) S-4-Chlorobenzyl-N,N-diethylthiocarbamate, (26) hexachlorophene, (27) triclosan, (28) mercury(II) chloride, (29) copper sulfate (II), (30) potassium cyanide, and (31) dimethylsulfoxide.

[0065] After contacted, the yeast cells were washed once with physiological saline, and then immobilized with a physiological saline containing 5% formalin, after which the fluorescence was determined by flow cytometry (EPICS XL: BECKMAN COULTER). Fluorometric range of the control was first defined. When the number of the cells having a higher fluorescence than the control was under 1%, "-" was indicated as not showing any fluorescence, whereas when the number was between 1% and 2%, and more, then "+" and "++" were indicated as showing a fluorescence, respectively. The results are shown in Table 13.

```

<tb><TABLE> Id=Table 13 Columns=4
<tb>
<tb>Head Col 1 to 2: Chemical substances

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Head Col 3: Concentrations	Head Col 4: Fluorescence
(1) benzo(a)pyrene	0.2 mM
(2) bisphenol-A	0.4 mM
(3) (2-ethylhexyl)phthalate	83.3 mM
(4) 2,5-dichlorophenol	0.3 mM
(5) 2,4-dichlorophenoxyacetic acid	0.3 mM
(6) formaldehyde	0.2 mM
(7) methylmercury chloride	0.2 μ M
(8) 4-nitroquinolin-N-oxide	0.6 μ M
(9) p-nonylphenol	10 μ M
(10) pentachlorophenol	50 μ M
(11) sodium arsenite	0.3 mM
(12) Tetramethylthiuram disulfide	20 μ M
(13) tributyltin chloride	0.4 μ M
(14) 2,4,5-trichlorophenol	30 mM
(15) Trp-P-2 (acetate)	0.2 mM
(16) paraquat	16.7 mM
(17) cadmium chloride	40 μ M
(18) gamma -hexachlorocyclohexane	6.7 mM
(19) malathion	22.2 mM
(20) manganese ethylenebis (dithiocarbamate)	0.8 mM
(21) nickel (II) chloride	3.3 mM
(22) potassium bichromate	0.3 mM
(23) triphenyltin chloride	10 μ M
(24) phenol	5.6 mM
(25) S-4-Chlorobenzyl-N,N-diethylthiocarbamate	0.7 mM
(26) hexachlorophene	30 μ M
(27) triclosan	730 μ M
(28) mercury(II) chloride	50 μ M
(29) copper sulfate (II)	3.3 mM
(30) potassium cyanide	16.7 mM
(31) dimethylsulfoxide	3.7 %

[0066] Table 13 shows that 2,4-dichlorophenoxyacetic acid, sodium arsenite, cadmium chloride, and potassium cyanide induced the expression of GFP.

Example 11

[0067] The cells of SC-YCR303W-pQBI as prepared in Example 6 were contacted to one of the following compounds. The yeast cells SC-YCR303W-pQBI were incubated at 25 DEG C in SD medium (Yeast nitrogen base without amino acids (Difco 0919-15) + glucose + amino acids (adenine, histidine, tryptophan)). One of toxic chemical substances as shown below was added to the cells at logarithmic growth phase, and then the cells were further incubated for two hours. Cells were incubated without chemical substance in the same condition, and was used as control.

(1) benzo(a)pyrene, (2) bisphenol-A, (3) (2-ethylhexyl)phthalate, (4) 2,5-dichlorophenol, (5) 2,4-dichlorophenoxyacetic acid, (6) formaldehyde, (7) methylmercury chloride, (8) 4-nitroquinolin-N-oxide, (9) p-nonylphenol, (10) pentachlorophenol, (11) sodium arsenite, (12) Tetramethylthiuram disulfide, (13) tributyltin chloride, (14) 2,4,5-trichlorophenol, (15) Trp-P-2 (acetate), (16) paraquat, (17) cadmium chloride, (18) gamma -hexachlorocyclohexane, (19) malathion, (20) manganese ethylenebis (dithiocarbamate), (21) nickel (II) chloride, (22) potassium bichromate, (23) triphenyltin chloride, (24) phenol, (25) S-4-Chlorobenzyl-N,N-diethylthiocarbamate, (26) hexachlorophene, (27) triclosan, (28)

mercury(II) chloride, (29) copper sulfate (II), (30) potassium cyanide, and (31) dimethylsulfoxide.

[0068] After contacted, the yeast cells were washed once with physiological saline, and then immobilized with a physiological saline containing 5% formalin, after which the fluorescence was determined by cytometry (EPICS XL: BECKMAN COULTER). Fluorometric range of the control was first defined. When the number of the cells having a higher fluorescence than the control was under 1%, "-" was indicated as not showing any fluorescence, whereas when the number was between 1% and 2%, and more, then "+" and "++" were indicated as showing a fluorescence, respectively. The results are shown in Table 14.

Id=Table 14 Columns=4			
Head Col 1 to 2: Chemical substances			
Head Col 3: Concentrations			
Head Col 4: Fluorescence			
(1)	benzo(a)pyrene	0.2 mM	++
(2)	bisphenol-A	0.4 mM	-
(3)	(2-ethylhexyl)phthalate	83.3 mM	-
(4)	2,5-dichlorophenol	0.3 mM	-
(5)	2,4-dichlorophenoxyacetic acid	0.3 mM	++
(6)	formaldehyde	0.2 mM	++
(7)	methylmercury chloride	0.2 μ M	-
(8)	4-nitroquinolin-N-oxide	0.6 μ M	-
(9)	p-nonylphenol	10 μ M	-
(10)	pentachlorophenol	50 μ M	-
(11)	sodium arsenite	0.3 mM	++
(12)	Tetramethylthiuram disulfide	20 μ M	-
(13)	tributyltin chloride	0.4 μ M	-
(14)	2,4,5-trichlorophenol	30 mM	-
(15)	Trp-P-2 (acetate)	0.2 mM	-
(16)	paraquat	16.7 mM	-
(17)	cadmium chloride	40 μ M	++
(18)	gamma-hexachlorocyclohexane	6.7 mM	-
(19)	malathion	22.2 mM	-
(20)	manganese ethylenebis (dithiocarbamate)	0.8 mM	+
(21)	nickel (II) chloride	3.3 mM	-
(22)	potassium bichromate	0.3 mM	-
(23)	triphenyltin chloride	10 μ M	-
(24)	phenol	5.6 mM	-
(25)	S-4-Chlorobenzyl-N,N-diethylthiocarbamate	0.7 mM	-
(26)	hexachlorophene	30 μ M	-
(27)	triclosan	730 μ M	-
(28)	mercury(II) chloride	50 μ M	++
(29)	copper sulfate (II)	3.3 mM	-
(30)	potassium cyanide	16.7 mM	++
(31)	dimethylsulfoxide	3.7 %	-

[0069] Table 14 shows that benzo(a)pyrene, 2,4-dichlorophenoxyacetic acid, formaldehyde, sodium arsenite, cadmium chloride, manganese ethylenebis(dithiocarbamate), mercury(II) chloride, and potassium cyanide induced the expression of GFP.

EMI132.1

EMI133.1

EMI134.1

EMI135.1

EMI136.1

EMI137.1

EMI138.1

EMI139.1

EMI140.1

Data supplied from the *esp@cenet* database - Worldwide

Claims of corresponding document: **EP1426439**

1. A polynucleotide which comprises a polynucleotide sequence operably linked to a polynucleotide encoding a marker protein, wherein the polynucleotide sequence comprises a promoter from yeast or that is selected from a group consisting of the following, or a promoter from a gene that is homologous to the yeast genes and is derived from other species:

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2. The polynucleotide according to claim 1, wherein the yeast gene belongs to a category of unknown genes.

3. The polynucleotide according to claim 1, wherein the yeast gene belongs to a category of mitochondrial genes.

genes.

4. The polynucleotide according to claim 1, wherein the yeast gene belongs to a category of DNA re genes.
5. The polynucleotide according to claim 1, wherein the yeast gene belongs to a category of energy {
6. The polynucleotide according to claim 1, wherein the yeast gene belongs to a category of transpor facilitation genes.
7. The polynucleotide according to claim 1, wherein the yeast gene belongs to a category of stress pr genes.
8. The polynucleotide according to claim 1, wherein the yeast gene belongs to a category of metabol genes.
9. The polynucleotide according to claim 1, wherein the yeast gene belongs to a category of detoxifi genes.
10. The polynucleotide according to claim 2, wherein the unknown yeast gene is YKL071W.
11. The polynucleotide according to claim 2, wherein the unknown yeast gene is YCR102C.
12. The polynucleotide according to claim 2, wherein the unknown yeast gene is YOR382W.
13. The polynucleotide according to claim 8, wherein the metabolism genes is YLR303W.
14. The polynucleotide according to claim 9, wherein the detoxification genes is YLL057C.
15. A vector that comprises the polynucleotide according to any one of claims 1 to 14.
16. A cell that is transformed with the polynucleotide according to any one of claims 1 to 14 or the v according to claim 15.
17. A process for detecting a toxic compound in a test material, which comprises:
 - (1) contacting the test material to the cells according to claim 16, and
 - (2) detecting the expression of mRNA encoding a marker protein.
18. The process according to claim 17, wherein the expression of mRNA is confirmed by the expres a marker protein.
19. The process according to claim 17, wherein the expression of mRNA is detected by northern blo
20. The process according to claim 17, wherein mRNA is amplified by reverse transcription-PCR (R PCR), and the expression of mRNA is detected.
21. A process of identifying a toxic compound, which comprises conducting the process according to one of claims 17 to 20 against each of two or more of the cell according to claim 16.
22. The process according to claim 21, wherein two or more of the cell according to claim 16 is sele from a group consisting of YLL057C, YLR303W, YKL071W, YCR102C, and YOR382W.

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添付公開書類:

— 国際調査報告書

— 明細書とは別に規則13の2に基づいて提出された生物材料の寄託に関する表示。

2文字コード及び他の略語については、定期発行される各PCTガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

(54) Title: METHOD OF DETECTING TOXIC SUBSTANCE

(54) 発明の名称: 毒性物質の検出方法

(57) Abstract: A method of detecting a toxic substance by a biological procedure. Namely, a toxic compound in a test sample is detected by transforming cells by a vector containing a polynucleotide wherein a polynucleotide encoding a marker protein is ligated to the promoter of a specific yeast gene; bringing the test sample into contact with the transformed cells; and then detecting the expression of mRNA encoding the marker protein.

(57) 要約:

毒性物質の生物学的な検出方法を提供する。特定の酵母遺伝子のプロモーターにマーカートンパク質をコードするポリヌクレオチドを作動可能に連結したポリヌクレオチドを含むベクターで細胞を形質転換し; 被験試料を、形質転換した細胞と接触させ; マーカートンパク質をコードするmRNAの発現を検出することにより被験試料中の毒性化合物を検出する。

WO 03/018792 A1

明 細 書

毒性物質の検出方法

5 技術分野

本発明は生物学的方法を用いた毒性化合物の検出方法に関する。本発明はまた該検出方法に用いるポリヌクレオチド、ベクター、及び細胞にも関する。

背景技術

10 環境庁により昭和49年から平成10年度までの24年間にわたり毎年行われている化学物質環境追跡調査結果によれば、今まで調査した775種類の化学物質のうち、約40%の物質が環境中に放出されている。一方、わが国において現在、工業的に生産されている化学物質は約5万種類とされ、その生産量、種類は年々増加している。また、塩素による水処理、焼却処理等により非意図的に生成された化学物質が環境を汚染することが知られている。これらの事実から、環境
15 中に蓄積されている化学物質は多数あると予測されるが、これら全てを個々に調査することはきわめて困難である。

従来のバイオアッセイ（生物材料を用いてその応答性から有害性を評価する手法）は主として魚類やミジンコ、貝等の個体、細胞の生育阻害や特定の生体反応を指標としており、環境中の化学物質による毒性の評価はできるが、その毒性の
20 性質やどのような化学物質に起因するかを判断することはできない。亜硝酸生成細菌または硝酸精製細菌の活性により評価する方法（特開平06-123705号公報、特開2000-206087号号公報）、鉄バクテリアの活性により評価する方法（特開平11-37969号公報）が提案されており、水質安全モニタ（富士電機）のような製品が販売されている。また、国外では、発光微生物の発光強度により評価する製品
25 （MICROTOX、azur社、アメリカ；LUMIS、drlange社、ドイツ）が市販されている。しかし、これらはいずれも従来型のバイオアッセイ法の延長であり、毒性化学物質に関する詳細な情報は得られない。

わが国の化学物質のリスク管理は、新たな汚染が見出されるたびに化学物質の見直しが行われ、さらに規制と自主規制を組み合わせる体制の整備がすすめられ

ている。しかし、トリハロメタンやダイオキシンに代表されるような有害化学物質の非意図的生成および環境放出など、複雑化、多様化する現状に即座に対応する体制は整っていない。また、「化学物質の審査及び製造等の規制に関する法律」における毒性評価法である動物実験はコストや時間がかかり国際的に受け入れ難くなっている。このように、管理体制についての問題は常に議論されるが、それを解決する具体的な手段が無いことから課題の解決には至っていない。従って、環境中に存在する化学物質を簡単に同定する方法が要望されている。

発明の開示

本発明者は毒性物質が特定の酵母遺伝子のプロモーターを活性化し、該プロモーターに作動可能に連結したマーカートンパク質をコードするポリヌクレオチドからmRNAの転写を誘導することを発見して本発明を完成させた。

即ち本発明は先ず、以下の群から選択される酵母遺伝子のプロモーターを含むポリヌクレオチド配列、並びにこれら遺伝子に相同性の他種由来の遺伝子のプロモーターを含むポリヌクレオチド配列よりなる群から選択されるポリヌクレオチド配列に、マーカートンパク質をコードするポリヌクレオチドを作動可能に連結したポリヌクレオチドに関する。

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YKL196C、YKR012C、YKR068C、YKR069W、YLL001W、YLL057C、YLL061W、YLR064W、
20 YLR070C、YLR099C、YLR144C、YLR157C、YLR160C、YLR164W、YLR364W、YLR421C、
YML032C、YML042W、YML112W、YML118W、YMR114C、YMR115W、YMR258C、YNL181W、
YNL191W、YNL212W、YNL213C、YNL250W、YNL265C、YNL312W、YNR032W、YOL038W、
YOL049W、YOL064C、YOR088W、YOR155C、YOR257W、YOR265W、YOR377W、YOR386W、
YPL031C、YPL113C、YPL124W、YPL151C、YPL249C、YPL260W、YPL274W、YPR048W、
25 YPR061C、YPR093C、YPR125W、YPR158W、YPR168W、YPR169W、YPR174C、YPR180W、
YPR193C、YPR200C、YAL014C、YAL017W、YAL049C、YBL019W、YBL058W、YBR001C、
YBR013C、YBR018C、YBR037C、YBR045C、YBR051W、YBR063C、YBR128C、YBR129C、
YBR204C、YBR241C、YBR255W、YBR281C、YCL044C、YCL055W、YCR014C、YCR019W、
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5 YER052C、YER078C、YER089C、YER092W、YER100W、YER162C、YER182W、YFL021W、
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YNL083W、YNL147W、YNL176C、YNL194C、YNL253W、YNL257C、YNL261W、YNL264C、
20 YNL276C、YNR006W、YNR034W、YNR047W、YNR051C、YNR071C、YOL065C、YOL067C、
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15 YBL100C、YBR011C、YBR096W、YBR100W、YBR127C、YBR283C、YBR286W、YCL008C、
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YDR345C、YDR359C、YDR382W、YDR385W、YDR400W、YDR407C、YDR538W、YEL024W、
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YJL191W、YJR018W、YJR047C、YJR077C、YJR119C、YJR121W、YJR123W、YJR143C、
YJR145C、YKL060C、YKL147C、YKL148C、YKL157W、YKL164C、YKL169C、YKR033C、
25 YLL041C、YLL064C、YLR041W、YLR044C、YLR056W、YLR058C、YLR081W、YLR089C、
YLR110C、YLR177W、YLR264W、YLR284C、YLR304C、YLR340W、YLR354C、YLR372W、
YLR388W、YML022W、YMR007W、YMR011W、YMR015C、YMR092C、YMR101C、YMR156C、
YMR205C、YMR215W、YMR261C、YMR323W、YNL069C、YNL135C、YNL195C、YNR076W、
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5 YFL026W、YGL018C、YGL059W、YNL144C、YOR003W、YAL037W、YAR023C、YBR003W、
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10 YFL046W、YFR006W、YFR008W、YGL115W、YGL208W、YGL214W、YGL218W、YGR021W、
YGR023W、YGR024C、YGR064W、YGR076C、YGR096W、YGR108W、YGR174C、YGR182C、
YGR236C、YGR288W、YHL042W、YHR195W、YHR210C、YIL006W、YIL012W、YIL028W、
YIL050W、YIL057C、YIL089W、YIL102C、YIL113W、YIL122W、YJL100W、YJL169W、
YJL199C、YJR039W、YJR050W、YJR101W、YKL003C、YKL016C、YKL061W、YKL093W、
15 YKL121W、YKL160W、YKL170W、YKL194C、YKR034W、YKR067W、YLR006C、YLR016C、
YLR030W、YLR036C、YLR112W、YLR125W、YLR128W、YLR204W、YLR211C、YLR233C、
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20 YOL118C、YOR053W、YOR100C、YOR103C、YOR122C、YOR150W、YOR187W、YOR251C、
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YPL066W、YPL148C、YPL230W、YPL275W、YPL276W、YPR005C、YPR014C、YPR192W、
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25 YOL108C、YOR385W、YPR165W、YAR033W、YBL038W、YBR009C、YBR010W、YBR151W、
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 YAR062W、YBL095W、YBL102W、YBR122C、YBR157C、YBR161W、YBR251W、YBR298C、
 YCR039C、YCR083W、YDL018C、YDL067C、YDL078C、YDL091C、YDL215C、YDL216C、
 5 YDR022C、YDR067C、YDR079W、YDR181C、YDR186C、YDR196C、YDR262W、YDR306C、
 YDR319C、YER188W、YGL004C、YGL035C、YGR036C、YGR062C、YGR120C、YGR131W、
 YGR141W、YGR167W、YGR287C、YHL024W、YHR080C、YHR097C、YIL077C、YJL046W、
 YJL070C、YJL096W、YJL113W、YJL146W、YJL180C、YJR019C、YJR049C、YKR058W、
 YLL005C、YLR078C、YLR151C、YLR271W、YLR295C、YLR351C、YLR375W、YMR023C、
 10 YMR025W、YMR135C、YMR210W、YMR267W、YMR278W、YMR293C、YNL073W、YNR037C、
 YNR040W、YNR072W、YOR028C、YOR316C、YOR328W、YOR363C、YPL039W、YPL040C、
 YPL099C、YPL107W、YPL134C、YPL138C、YPL140C。

これら酵母遺伝子の塩基配列、アミノ酸配列は公共のデータベース（例えば、
 15 ドイツのM I P S : Munich Information Center for Protein Sequence、米国の
 S G D : Saccharomyces Genome Database）に開示されており、インターネット
 を介して知ることができる。また、プロモーター配列についても公共のデータベ
 ース（SCPD : The Promoter Database of Saccharomyces cerevisiae）に開示さ
 れている。

20 上記酵母遺伝子のプロモーターばかりでなく、上記酵母遺伝子に相同性を有す
 る他種由来の遺伝子のプロモーターも使用できる。ここに「酵母遺伝子に相同性
 を有する遺伝子」とは、酵母遺伝子の塩基配列に50%以上、好ましくは80%
 以上の相同性を有する塩基配列を含む遺伝子であって、該酵母遺伝子がコードす
 るタンパク質と同じ機能を有するタンパク質をコードする塩基配列を含む遺伝子
 25 を言う。

上記遺伝子のプロモーターのポリヌクレオチド配列に、マーカータンパク質を
 コードするポリヌクレオチドを作動可能に連結してポリヌクレオチド構築物を得
 る。プロモーターにタンパク質をコードするポリヌクレオチドを作動可能に連結
 する方法は当業者によく知られている（例えばR. W. オールド、S. B. プリムローズ

遺伝子操作の原理 原書第5版, 培風館, pp138-165, pp.234-263, 2000を参照)。

マーカータンパク質の例としてはGFP (Green Fluorescence Protein)

(Heim, R., Cubitt, A. B. and Tsien, R. Y. (1995) Nature 373, 663-664 ;

Heim, R., Prasher DC. and Tsien, R. Y. (1994) Proc. Natl. Acad. Sci.,

5 91, 12501-12504 ; Warg, S. and Hazerigg, T. (1994) Nature 639, 400-403 ;

Youvan, D.C. and Michel-Beyerle, M.E. (1996) Nature Biotechnology 14

1219-1220 ; Chalfie, M., Tu, Y., Euskirchen, G., Ward, W. W. and Prasher,

D.C. (1994) Science 263, 802-805) 、 β -ガラクトシダーゼ (Canestro C,

Albalat R, Escriba H, Gonzalez-Duarte R. Endogenous beta-galactosidase

10 activity in amphioxus: a useful histochemical marker for the digestive

system. Dev Genes Evol 2001 Mar 211(3):154-6) 、ルシフェラーゼ (Arch

Toxicol 2002 Jun;76(5-6):257-61、Estrogenic activity of UV filters

determined by an in vitro reporter gene assay and an in vivo transgenic

zebrafish assay. Schreurs R, Lanser P, Seinen W, Van Der Burg B.)、及びア

15 セチルトランスフェラーゼ (J Recept Signal Transduct Res 2001

Feb;21(1):71-84, A simplified method for large scale quantification of

transcriptional activity and its use in studies of steroids and steroid

receptors. Zhang S, Lu J, Iyama K, Lo SC, Danielsen M.)を挙げることがで

きる。

20 本発明は上記ポリヌクレオチド構築物を含むベクターにも関する。

酵母遺伝子のプロモーター配列を含むポリヌクレオチドは、公共のデータベー

スから知られる上記酵母遺伝子の塩基配列を基に、必要と思われる部分を複写す

るプライマーを設計し、酵母ゲノムDNAをテンプレートとしてPCR法で増幅す

ることによって得る。また、目的とする細胞において複製可能なプラスミドを選

25 択し、これにマーカータンパク質の塩基配列を挿入する。先に作成したプロモー

ター配列を含むポリヌクレオチドを、マーカー遺伝子上流部分に挿入すること

により、目的とするベクターが得られる。

本発明は上記ベクターで形質転換した宿主細胞にも関する。用いる宿主細胞と

してはヒト細胞が好ましいのは当然であるが、マウスその他哺乳類の細胞でも良

い。また、環境中の毒性評価という面から、これまでバイオアッセイに用いられている魚類、線虫等の細胞でも可能である。また、培養が容易であることから微生物の細胞を用いることも好ましい。また、本法は酵母細胞の遺伝子を基にしていること、また酵母の生育は塩濃度その他の環境試料において変動する条件に左右されないことから、好ましい細胞は酵母細胞である。細胞を形質転換する方法はよく知られている（例えば、Kaiser C, Michaelis S, Mitchell A: Lithium acetate yeast transformation, Methods in Yeast Genetics, A Cold Spring Harbor Laboratory Course Manual 1994 edition (Cold Spring Harbor Laboratory Press) pp. 133-134, 1994を参照）。またベクターを用いなくとも当該酵母遺伝子のコード領域をマーカートンパク質をコードするポリヌクレオチド配列で置換することによっても目的は達せられる。上記ポリヌクレオチド構築物を細胞に直接導入することも可能であり、その方法も周知である。

本発明は、

(1) 被験物質を、上記の形質転換した細胞と接触させ、

(2) マーカートンパク質をコードするmRNAの発現を検出すること、を含む被験物質中の毒性化合物の検出方法にも関する。

被験物質を、細胞と接触させる場合は、例えば形質転換した細胞をその細胞を培養するに適した条件下で液体培養し、その培養液に直接被験物質を添加する方法により行う。

次にマーカートンパク質又はこれをコードするmRNAの発現量を測定する。マーカートンパク質の発現量を測定は、細胞を粉砕しタンパク質抽出液を得、この液中のマーカートンパク質量を測定すれば良い。例えばマーカ蛋白質がGFPの場合は、タンパク質抽出液の蛍光量を蛍光分光光度計により計測する。また、細胞を粉砕せずに蛍光顕微鏡、レーザー顕微鏡による観察および画像処理、フローサイトメトリーによる計測、さらにエバネッセント光などを用いた検出方法が可能である。

mRNAの発現は、1) ノーザンブロット法（緒方宣邦、野島博：遺伝子工学キーワードブック 改定第2版、羊土社、2000, pp299-301）により検出するか、2) 逆転写PCR法（RT-PCR）（中別府雄作、他：細胞工学別冊 Tipsシ

リーズ 改定PCR Tips, 秀潤社、1999, pp25-43) 等によって検出することができる。

ノーザンブロット法の手順はRNAを電気泳動して、そのパターンをフィルターに移しとり、アイソトープで標識した特異的な標識プローブとハイブリダイゼーションをさせることで、標本中のmRNAの存在と量、およびその長さを解析する。また、RT-PCRは、まずRNAを逆転写酵素 (reverse transcriptase) を用いてcDNAに逆転写し、次にこのcDNAを出発材料として特定のプライマーセットと耐熱性DNAポリメラーゼを用いてPCRを行い、目的のRNAの存在をそのcDNAの増幅という形で、検出定量化する方法である。

本発明の方法により検出できる毒性物質は特に限定がないが例えば、 Na_2As 、 CdCl_2 、 HgCl_2 、 PbCl_2 、4-ニトロキノリン-N-オキサイド、2, 4, 5-トリクロロフェノール、 γ -ヘキサクロロシクロヘキサン、エチレンビスジチオカルバミドサンマンガン、2, 4, 5, 6-テトラクロロ-1, 3-ベンゼンジカルボニトリル、テトラメチルチウラムジスルフィド、エチレンビス (ジチオカルバメート) 亜鉛、8-メチル-N-バニリル-6-ノネンアミド、ジンジャオール、アクロレイン、ジメチルスルホオキシド、ラウンドアップ (登録商標、除草剤) (N-(ホスホメチル) グリシナートアンモニウム41.0%、界面活性剤59.0%)、ドデシルベンゾスルホン酸ナトリウム、ラウリル硫酸ナトリウム、2, 4-ジクロロフェノキシ酢酸、シアン化カリウム、ベンゾ (a) ピレン、ホルムアルデヒド、ビスフェノールA、2, 5-ジクロロフェノール、塩化メチル水銀、p-ノニルフェノール、ペンタクロロフェノール、塩化ニッケル (II)、重クロム酸カリウム、トリフェニルスズクロライド、フェノール、S-4-クロロベンジル-N, N-ジエチルカルバマート、ヘキサクロロフェン、トリクロサン、硫酸銅等を含む。

2つ以上の細胞、即ち異なる酵母遺伝子のプロモーターにマーカートンパク質をコードするポリヌクレオチドを作動可能に連結したポリヌクレオチドを含むベクターで形質転換した2つ以上の細胞を用いて、それぞれについて上記方法を行なうと毒性物質を更に特定することができる。例えば以下の実施例で示すように

酵母遺伝子プロモーターとしてYLL057Cのものを用いると2, 4-ジクロロフェノキシ酢酸、亜ヒ酸若しくはその塩、カドミウム塩、青酸若しくはその塩が検出可能であり、酵母遺伝子としてYLR303Wを用いると2, 4-ジクロロフェノキシ酢酸、亜ヒ酸若しくはその塩、カドミウム塩、青酸若しくはその塩、ベンゾ(a)ピレン、ホルムアルデヒド、エチレンビスジチオカルバミドサンマンガン、水銀塩が検出可能である。従って、例えば、酵母遺伝子としてYLR303Wを用いた場合にはマーカートンパク質の発現が誘導されるが、酵母遺伝子としてYLL057Cを用いた場合にはマーカートンパク質の発現が誘導されないなら毒性物質はベンゾ(a)ピレン、水銀塩、エチレンビスジチオカルバミドサンマンガン又はホルムアルデヒドと特定される。またいずれの酵母遺伝子を用いた場合にもマーカートンパク質の発現が誘導されるなら毒性物質は2, 4-ジクロロフェノキシ酢酸、亜ヒ酸若しくはその塩、カドミウム塩、又は青酸若しくはその塩と特定される。

以下に本発明を実施例により更に説明するが本発明はこれら実施例に限定されるものではないことは勿論である。

実施例

実施例 1

毒性物質の検出のためいかなる酵母遺伝子が有用であるかを調べるため以下の実験を行った。

YPD培地（酵母エキス1%、ポリペプトン2%、ブドウ糖2%）に酵母（*Saccharomyces cerevisiae* S288C(α SUC2mal mel gap2 CUP1))を25℃で培養した。対数増殖期に以下の細胞に対して毒性を有する化学物質の1つを添加して更に2時間培養した。これと同条件で化学物質を添加せずに培養して対照区とした。化学物質の濃度は酵母の生育を阻害するが死滅には至らないような濃度を選択した。

化学物質	濃度
(1) Na_2As	0.3 mM
(2) CdCl_2	0.3 mM
(3) HgCl_2	0.7 mM

	(4) $PbCl_2$	2 mM
	(5) 4-ニトロキノリン-N-オキサイド	0. 2 μ M
	(6) 2, 4, 5-トリクロロフェノール	1 6 μ M
	(7) γ -ヘキサクロロシクロヘキサン	1. 3 mM
5	(8) エチレンビスジチオカルバミドサンマンガン	2 p p m
	(9) 2, 4, 5, 6-テトラクロロ-1, 3- ベンゼンジカルボニトリル	1 0 μ M
	(10) テトラメチルチウラムジスルフィド	7 5 μ M
	(11) エチレンビス (ジチオカルバメート) 亜鉛	2 p p m
10	(12) 8-メチル-N-バニリル-6-ノネンアミド	0. 8 2 mM
	(13) ジンジャオール	1. 3 6 mM
	(14) アクロレイン	0. 2 0 mM
	(15) ジメチルスルホオキシド	1. 4 1 M
	(16) ラウンドアップ (登録商標、除草剤) ¹⁾	1 5 0 0 倍希釈
15	(17) ドデシルベンゾスルホン酸ナトリウム	0. 0 2 %
	(18) ラウリル硫酸ナトリウム	0. 0 1 %
	1) N- (ホスホメチル) グリシナートアンモニウム 4 1. 0 %、界面活性剤 5 9. 0 %	
20	培養終了後遠心して集菌した。これに酢酸ナトリウム緩衝液 (5 0 mM 酢酸ナトリウム、1 0 mM EDTA、1 % SDS) を加え、6 5 °C で 5 分間振とうし、室温に戻した後上澄みを得るという操作を 2 回繰り返した。これにフェノール/クロロホルム 1 : 1 溶液を 1 / 2 容量加えて遠心し上澄みを得、これに上澄みと等容量のクロロホルムを加え遠心し、上澄みを得た。この上澄みに等容量の 0. 3 M 酢酸ナトリウムを含むイソプロパノールを加え室温にて 3 0 分放置後遠心を行ない全 RNA の沈殿物を得た。この沈殿物に 7 0 % エタノールを加え遠心し再度沈殿させ、乾燥後水に溶解させた。この全 RNA から次の方法により mRNA を単離した。mRNA は 3' 末端にポリ A 鎖が付加されているため、ラテックス粒子の表面上に固定されたポリ T 構造を持ったポリヌクレオチドにより mRNA	
25		

をトラップした後に、スピンカラムで洗浄、溶出を行なった (Oligotex-dT30<Super>mRNA Purification Kit, Takara)。このmRNAを蛍光標識したヌクレオチドを用い逆転写酵素 (Super Script II Reverse Transcriptase; カタログ番号18064-014, GibcoBRL) を用いて逆転写し、逆転写の際にCy 3-dUTPまたはCy 5-dUTPを取りこませて標識cDNAを得た。

この標識cDNAをTEバッファー (10mM Tris・HCl/1mM EDTA, pH8.0) に溶解し、酵母のすべての遺伝子を有するDNAチップ (DNAチップ研究所製) に滴下し、65℃で12時間以上ハイブリダイズさせた。このDNAチップの蛍光強度をスキャナーで読み取り、化学物質を添加しない場合の蛍光強度に対する比、即ち化学物質存在下における発現mRNA量/化学物質不存在下における発現mRNA量として表1～9に示した。なおこれらの表中、最右欄の「強度」はコントロール細胞における各遺伝子のmRNA発現量を全遺伝子の発現量の平均値で割った値である。コントロールのmRNA発現量が小さく、化学物質を添加した場合のmRNA発現量が大きい遺伝子が毒性物質の検出に特に有用である。

酵母遺伝子
表 1 機能未知の酵母遺伝子
化学物質存在下の発現 mRNA / 不存在下の発現 mRNA

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	強度
YCR102C	3.4	3.2	2.4	1.1	0.7	0.4	1.1	4.9	9.8	61.5	13.5	0.5	1.1	4.1	0.9	1.2	1.1	1.2	0.53
YDL218W	3.5	1.2	2.6	1.4	0.7	0.9	1.1	1.5	72.5	12.6	5.7	0.9	1.1	4.8	1.1	3.5	1.1	0.9	0.42
YDR533C	3.4	4.9	3.5	1.8	1.3	2.2	1.7	5.4	7.3	12.7	7.7	1.4	3.0	2.9	2.5	6.7	2.3	2.7	1.82
YGR110W	1.6	3.1	2.2	5.9	0.9	0.9	1.7	1.5	6.4	4.8	0.5	1.4	3.6	2.8	1.2	17.1	0.9	2.1	0.19
YKL071W	8.3	3.8	5.4	2.8	1.1	18.6	3.7	24.7	162.2	109.2	40.3	1.0	8.4	21.9	1.7	2.2	1.0	0.9	0.31
YLR460C	2.1	2.1	2.0	1.1	1.3	0.6	1.1	8.1	13.9	31.6	14.3	0.4	0.7	3.5	0.7	1.8	1.0	1.1	0.48
YMR090W	6.9	9.5	2.3	3.5	0.7	3.8	2.7	3.9	16.7	6.1	8.8	2.2	6.9	6.5	1.9	5.1	1.8	2.8	1.30
YOL150C	4.1	3.7	9.9	0.9	1.0	5.2	2.4	3.7	10.8	8.3	9.4	2.9	8.9	5.7	1.8	3.1	2.7	2.2	0.47
YBL048W	2.0	7.9	2.3	2.8	1.3	2.0	1.9	1.2	7.2	4.4	2.0	1.2	2.7	2.0	4.1	5.7	1.3	1.0	0.29
YBL107C	1.4	1.1	0.4	1.5	1.2	1.1	2.1	1.9	1.0	3.1	2.9	1.4	2.6	2.5	1.4	1.5	0.9	1.4	1.03
YFL024C	1.0	1.1	1.1	0.7	1.1	2.0	3.3	0.9	0.5	0.5	0.6	0.8	0.9	3.3	0.9	1.1	0.9	0.8	0.37
YGL121C	2.6	5.0	1.4	4.2	0.9	9.8	4.7	3.0	7.0	15.0	6.1	1.6	7.8	5.8	1.6	8.5	2.7	3.5	0.60
YHR029C	2.8	1.8	1.8	1.8	1.0	2.7	2.0	2.7	13.6	8.6	3.8	1.5	4.7	3.5	1.0	1.0	2.1	2.1	0.87
YHR209W	2.8	1.1	0.8	4.5	1.8	3.2	5.0	2.0	2.9	6.4	3.3	1.0	2.0	2.2	5.0	3.5	2.6	2.6	0.56
YKL107W	2.4	2.5	0.5	0.8	1.1	2.0	1.1	0.9	28.2	8.3	2.0	1.0	1.9	3.4	1.7	3.5	1.6	0.9	0.17
YKR075C	1.5	0.7	2.7	4.5	1.2	1.5	1.4	2.0	0.2	0.6	1.3	2.3	3.8	2.7	0.4	4.3	2.4	1.9	1.15
YLL056C	2.1	2.3	3.0	2.0	1.1	0.6	1.0	1.3	58.8	8.8	1.7	1.3	6.8	11.0	1.5	4.8	5.3	2.5	0.32
YLR297W	2.4	2.1	3.5	1.7	1.3	0.8	1.1	1.3	2.1	5.5	3.5	0.8	0.8	2.3	0.7	1.8	0.7	1.0	0.81
YOR338W	1.8	1.8	0.5	1.7	1.6	2.6	1.3	2.2	0.6	3.5	0.8	1.2	1.4	2.5	1.8	1.0	1.1	0.5	0.52
YOR391C	2.1	2.0	0.9	1.2	1.3	1.6	2.0	2.8	18.8	18.1	3.2	1.1	2.3	2.4	5.8	2.2	1.0	0.9	0.22
YPL280W	1.7	1.9	1.9	2.0	1.4	1.9	1.8	2.3	49.8	14.0	1.9	0.9	2.4	2.4	4.3	1.5	1.2	0.9	0.22
YLR346C	4.4	2.0	2.1	4.5	1.4	5.5	5.6	1.3	8.6	6.6	0.5	4.2	6.2	2.2	1.0	2.4	10.6	7.8	0.53
YOR049C	2.5	0.9	12.8	1.4	1.3	8.4	4.2	0.9	1.1	1.9	1.1	6.7	7.1	1.5	1.3	4.3	2.6	2.9	0.22
YAL034C	1.1	1.8	2.8	1.1	1.0	1.5	1.8	1.0	3.0	3.3	1.5	2.8	4.9	1.2	1.4	1.0	1.2	1.3	0.52
YDR476C	0.7	1.8	6.0	1.2	0.5	3.1	1.5	1.3	1.7	3.4	1.6	2.1	2.8	1.1	2.2	2.0	2.4	1.5	0.58
YGR035C	1.6	0.6	1.2	0.6	1.3	3.3	1.1	0.9	1.1	0.5	0.4	3.3	2.1	0.8	0.3	1.9	2.5	4.3	1.04
YGR284C	1.0	2.0	4.0	1.4	1.2	1.4	2.2	1.1	4.3	1.8	1.7	2.1	3.6	1.2	3.9	1.9	1.3	2.1	2.57
YHR054C	1.7	0.9	2.2	1.0	1.0	2.9	1.6	1.8	2.6	7.7	0.9	3.6	5.8	1.0	0.8	2.2	5.1	3.4	0.80

YLR008C	0.9	0.5	0.7	0.9	1.3	2.7	2.0	1.0	0.4	0.7	0.8	3.5	6.2	1.6	0.7	1.7	5.4	4.9	2.00
YMR315W		4.3	1.8	1.7		4.2	2.9	2.0	2.4	2.6	3.2	2.0	2.5	1.3	2.5	1.6	2.1	2.8	1.76
YNL211C	1.2	1.0	0.8	1.0	1.0	7.4	3.1	1.1	0.8	1.1	1.1	3.2	9.9	1.1	0.8	9.3	4.2	6.8	0.52
YOL031C	0.9	1.9	1.0	1.7	1.2	1.0	2.5	2.1	2.3	1.4	1.3	2.1	2.4	1.1	4.4	1.5	1.2	1.9	1.20
YOL101C	0.9	0.8	0.4	1.7	1.6	0.5	0.7	0.9	0.1	0.3	0.9	2.4	0.2	0.8	0.6	3.5	0.6	0.6	1.37
YAR031W	1.5	1.1	1.1	1.7	1.1	2.9	1.6	1.2	2.7	1.6	1.4	1.2	3.3	1.4	0.9	3.5	1.6	2.5	1.00
YBL049W	2.9	11.8	2.1	2.9	1.1		1.7	1.9	5.2	5.2	2.2	0.7	3.9	1.5	7.2	6.4	1.1	1.1	0.47
YBR062C	1.3	1.7	0.4	1.2	1.4	1.9	1.5	1.9	5.4	2.2	2.3	1.2	2.8	2.6	0.7	2.2	1.4	1.6	0.93
YCR013C	1.3	1.4	5.0	1.1	1.1	1.8	1.6	0.7	0.8	1.3	2.4	1.4	3.9	1.5	1.6	1.6	1.1	1.3	2.80
YDL027C	1.2	2.0	1.7	1.7	1.2	2.1	2.9	1.5	2.0	2.3	1.7	1.7	3.2	1.1	1.4	1.8	1.4	2.0	0.69
YDL110C	1.5	1.4	1.1	2.1	0.8	1.7	2.5	1.8	3.0	2.3	1.9	1.5	2.7	2.7	1.3	3.6	2.0	4.4	1.27
YDL169C	1.7	1.7	1.1	1.3	1.1	2.6	2.1	1.3	7.3	4.7	1.2	1.2	3.7	2.7	2.2	3.8	1.5	1.6	0.42
YDR070C	2.2	6.4	3.6	3.5	0.9	6.2	1.4	1.9	13.9	6.0	4.1	4.3	6.6	2.0	2.1	15.1	1.2	3.1	0.44
YDR210W	1.1	1.0	0.9	1.0	2.0	1.2	1.5	1.4	0.5	1.0	1.0	1.0	2.3	1.1	1.0	1.5	1.9	1.9	1.82
YDR214W	1.3	4.0	4.5	1.3	1.1	1.7	1.5	1.5	5.5	2.4	1.9	1.1	5.3	1.2	1.1	0.7	1.2	1.0	1.07
YDR435C	1.2	1.1	1.2	1.4	1.2	2.5	2.1	1.2	0.8	2.1	1.3	1.1	2.5	1.3	0.6	2.0	1.3	2.0	1.30
YER037W	2.0	2.1	0.8	1.1	1.3	3.2	2.6	1.0	1.0	5.5	1.5	1.2	3.0	1.7	0.8	1.8	1.7	2.6	1.17
YFL044C	1.0	1.5	0.8	2.3	1.6	1.3	1.6	1.4	5.2	3.7	2.2	1.2	4.7	1.2	1.0	1.8	1.3	1.4	0.50
YFR003C	1.2	1.5	0.8	1.6	1.0	2.2	1.4	1.4	8.3	3.1	1.4	0.9	2.5	2.1	1.0	1.4	1.3	1.8	1.01
YFR020W	1.0	0.9	1.2	1.0	0.9	1.4	1.1	0.9	3.7	3.5	1.4	0.9	2.3	1.8	2.6	1.0	1.2	0.9	0.61
YFR044C	0.9	1.3	3.8	1.1	0.9	2.1	1.2	0.8	2.1	2.2	1.9	1.2	3.1	0.8	1.5	1.2	1.0	1.0	1.99
YGR010W	1.2	1.6	0.9	1.2	0.8	1.2	1.7	1.6	13.6	8.9	1.5	0.9	5.2	1.9	1.3	1.4	0.8	1.3	0.55
YGR142W	2.7	6.2	15.3	1.3	1.3	0.9	1.4	1.5	36.8	12.2	2.3	2.0	8.9	0.9	1.3	0.3	1.9	1.5	1.28
YGR161C	2.0	2.2	5.4	3.8	1.0	1.4	1.4	1.3	2.0	3.8	0.8	1.7	2.8	0.9	1.7	1.1	1.5	1.8	0.65
YGR212W	1.5	1.7	1.5	1.3	1.2			1.0	1.1	3.8	0.9	1.5	10.0	1.1	1.1	2.1	3.9	2.2	0.28
YGR268C	1.1	2.3	2.0	2.5	1.1	1.1	1.0	1.1	4.1	1.6	0.8	1.0	2.8	1.0	1.5	1.2	1.5	1.4	0.48
YHR016C	0.8	1.5	1.7	1.5		1.8	3.7	0.8	2.8	2.0	2.2	1.3	3.3	0.9	0.6	2.1	1.2	1.4	0.51
YHR087W	1.2	2.7	8.6	2.8	0.7	4.2	3.4	1.2	4.1	3.9	3.7	1.4	4.0	1.5	1.9	3.8	1.2	2.9	1.34
YJL048C	1.7	2.5	2.0	2.9	0.9	1.5	0.7	1.5	1.2	3.8	3.2	1.1	2.4	1.7	0.6	2.3	1.6	2.5	0.82
YJL144W	1.9	1.6	2.2	1.6	1.2	1.7	1.7	1.3	14.6	8.9	3.0	0.8	3.9	1.6	1.0	2.5	2.2	2.4	0.60
YJL163C	1.2	1.9	1.7	1.5	0.9	2.8	2.3	0.7	14.5	2.5	3.1	2.0	4.5	1.0	2.0	2.8	1.5	1.7	0.28

YJR074W	1.0	1.4	2.0	2.0	0.7	1.2	1.8	1.3	3.7	3.1	1.2	2.0	2.8	1.7	3.4	1.5	1.8	1.9	0.68
YKL065C	1.9	2.0	1.3	1.7	1.0	2.3	3.8	1.8	3.1	3.9	1.3	1.3	3.0	2.1	1.7	2.8	2.8	4.6	2.29
YKR011C	1.1	1.6	0.9	1.6	1.2	2.3	2.7	2.0	4.7	4.4	1.5	1.1	3.5	1.4	1.8	1.3	1.3	1.9	0.66
YKR018C	0.7	1.1	1.7	0.7	0.9	1.7	1.0	0.7	3.9	1.7	1.4	1.0	3.0	1.1	1.0	1.8	1.0	1.2	0.98
YKR046C	1.9	7.8	2.8	1.8	0.6	1.9	1.3	0.8	3.9	2.0	2.6	1.3	2.8	1.9	2.9	3.5	1.2	1.9	0.73
YKR049C	1.6	4.2	1.0	3.2	0.9	3.0	2.4	1.3	2.2	3.2	2.2	1.2	4.1	2.1	0.9	4.2	1.6	3.3	1.17
YLR132C	1.0	1.1	0.3	1.1	1.2	1.1	1.1	0.7	4.5	2.5	0.5	1.0	2.7	1.3	2.3	1.6	1.2	1.6	0.36
YLR161W	0.9	0.8	0.8	0.7	0.9	1.2	1.3	0.8	1.0	1.5	1.5	0.8	2.1	1.0	0.6	1.1	1.1	0.9	0.33
YLR217W	0.9	2.0	2.1	0.7	1.4	1.4	1.5	1.0	3.2	8.2		0.9	3.8	0.9	0.9	0.8	1.0	1.2	0.35
YLR328W	1.3	1.2	1.3	0.9	0.9	4.8	5.4	1.1	0.9	1.2	1.4	1.2	4.3	0.5	0.8	1.4	1.1	0.8	1.04
YML128C	1.5	3.3	4.1	4.1	0.5	5.1	2.8	1.1	5.1	3.1	2.9	1.4	4.9	1.4	2.6	5.6	2.0	5.5	1.66
YMR040W	3.1	2.9	0.9	2.8	1.7	2.8	5.1	1.7	1.4	1.4	1.5	2.1	5.2	1.8	2.0	2.7	3.1	3.7	0.62
YMR251W	1.3	1.3	1.8	0.6	2.2	1.6	3.1	1.7	3.1	11.6	2.8	1.2	2.5	1.5	0.4	1.3	1.5	0.9	0.20
YMR322C	2.0	4.3	1.5	2.9	1.4	1.8	1.7	2.1	21.3	10.3	3.2	1.1	2.1	2.7	3.6	1.8	1.4	0.8	0.18
YNL094W	0.9	1.4	1.1	1.0	1.4	2.9	1.2	2.0	3.5	2.6	1.7	1.2	3.4	1.0	1.5	1.5	1.1	1.3	0.66
YNL134C	2.3	6.0	4.5	0.9	1.7	1.4	1.5	3.2	6.1	5.9	5.0	1.1	3.1	1.4	0.8	2.1	1.3	2.0	2.51
YNL155W	1.1	1.2	1.1	0.9	1.4	3.0	1.3	1.7	5.8	2.7	2.2	1.1	4.4	2.1	2.0	2.0	1.1	1.6	1.89
YOR059C	1.2	1.2	0.4	0.9	1.4	1.1	2.2	1.3	7.6	4.6	1.0	1.0	3.3	2.2	3.5	1.8	1.3	1.7	0.71
YOR152C	4.5	2.5	3.4	2.9	0.8	4.5	3.2	1.2	10.0	5.0	2.7	2.9	7.4	1.7	3.6	2.1	4.0	2.2	0.42
YOR173W	0.7	2.3	6.3	2.0	0.9	3.5	4.9	1.4	5.2	3.7	2.3	1.9	3.8	2.8	0.7	5.7	1.7	3.8	0.54
YOR289W	1.6	1.5	1.0	2.0	1.2	4.2	6.1	2.4	2.4	1.7	2.6	1.5	4.3	2.0	1.6	3.0	2.3	3.9	0.74
YPR030W	1.7	1.4	1.4	1.0	1.2	1.3	1.2	0.9	2.5	2.4	1.2	1.4	3.2	1.5	1.5	3.1	1.4	2.1	0.30
YAL008W	1.4	2.4	2.0	2.4	0.7	1.6	1.9	1.3	1.8	1.5	2.2	1.3	2.2	2.6	0.9	4.2	1.4	1.9	1.04
YBR053C	1.0	1.6	2.4	2.4	1.6	2.7	4.1	1.2	2.9	2.1	2.3	1.1	2.4	1.0	0.7	2.8	1.9	2.4	1.25
YBR099C	1.0	1.4	7.2	1.8	1.0	0.5	0.9	1.5	3.4	12.9	0.4	1.0	2.1	1.6	0.8	0.5	0.8	0.9	0.47
YBR137W	1.1	2.2	1.4	3.5	0.9	2.4	2.7	2.0	2.2	1.8	2.4	1.4	2.1	1.8	0.6	2.8	1.4	2.6	1.40
YBR203W	1.4	1.4	1.6	2.4	0.9	0.6	0.9	1.3	1.1	1.8	1.3	1.6	2.4	1.3	1.0	18.0	1.4	2.2	0.38
YCL049C	1.9	1.3	1.4	1.2	1.6	2.3	2.1	1.0	2.0	1.9	1.6	1.4	2.4	1.8	1.4	2.1	1.4	1.4	0.86
YCR082W	1.4	1.2	0.7	1.2	1.3	1.3	1.5	1.5	4.3	2.3	2.0	1.0	2.0	2.4	1.6	2.2	1.2	1.7	1.62
YDL054C	1.3	2.2	2.7	1.1	1.2	1.2	0.9	0.7	3.5	2.1	2.1	1.1	2.7	1.2	1.0	1.0	1.0	1.0	0.92
YDL115C	1.4	1.0	0.5	1.8	0.8	1.5	1.8	1.6	6.6	3.6	1.8	1.1	1.9	2.3	1.2	1.6	1.3	1.8	0.83

YDL144C	0.8	0.9	1.2	1.5	1.0	1.8	1.0	0.9	3.6	1.2	1.9	1.0	2.1	1.2	1.0	1.1	0.9	0.9	0.52
YDL223C	0.7	1.1	5.0	2.5	0.9	0.8	1.0	0.3	38	1.5	5.2	1.0	3.1	1.3	3.1	7.2	0.9	1.0	0.32
YDR032C	1.7	2.2	3.5	2.5	1.4	2.7	2.8	2.4	3.1	2.9	3.3	1.8	2.9	2.8	1.3	3.8	1.9	3.5	3.50
YDR330W	0.8	1.5	1.2	0.8	1.2	2.3	1.3	1.1	3.9	2.6	0.9	1.0	2.2	1.1	1.6	1.4	1.5	1.3	0.53
YDR411C	0.9	2.8	1.8	1.2	1.6	0.8	2.0	0.9	0.7	1.0	1.3	1.5	1.9	0.8	4.1	1.5	1.5	1.3	0.56
YDR511W	1.3	1.7	0.9	2.3	1.0	2.0	1.5	1.7	2.5	2.2	1.2	0.8	3.1	2.2	0.8	2.2	1.3	1.5	0.66
YDR545W	0.6	1.2	0.6	0.7	1.4	1.0	1.2	0.6	1.8	0.7	0.7	0.9	2.0	0.7	0.9	0.9	0.9	0.9	1.06
YER004W	1.0	1.5	1.9	1.4	1.5	1.2	1.4	1.1	4.5	2.9	2.2	1.7	4.6	1.8	1.4	2.3	1.4	1.2	1.48
YER035W	1.4	1.6	1.6	1.9	1.5	0.9	1.9	1.2	1.2	1.4	1.4	1.1	1.9	1.0	0.9	2.1	2.2	2.1	0.85
YER079W	1.1	1.6	1.9	2.0	0.8	1.5	1.9	1.4	5.3	3.4	2.1	0.9	2.1	1.6	0.5	1.4	1.0	1.6	0.69
YER158C	1.2	0.9	0.9	3.1	0.8	0.7	1.2	0.9	2.1	1.6	2.3	1.0	3.1	0.9	0.6	1.6	1.6	1.2	0.61
YER163C	1.1	2.4	1.2	1.6	0.8	2.0	1.5	1.4	5.4	3.4	1.6	1.0	2.9	1.9	1.6	2.4	1.2	1.2	0.62
YER175C	0.9	1.2	1.3	2.2	0.9	0.8	2.3	1.1	1.9	11.5	1.1	0.9	4.3	1.1	1.3	2.8	0.9	1.2	0.53
YFL006W	0.8	2.8	1.6	1.0	1.4	1.2	1.0	1.0	3.2	1.7	1.2	1.2	3.1	1.7	2.4	1.1	1.0	0.8	0.82
YFL010C	1.0	4.8	1.3	1.0	1.3	1.9	1.5	1.0	3.1	1.4	1.4	1.5	3.3	1.4	1.7	1.4	1.9	1.6	0.77
YFL032W	0.4	1.5	1.6	0.8	0.9	0.6	1.1	0.4	0.5	0.6	1.1	0.7	2.4	0.6	2.0	0.7	1.7	0.8	1.62
YGL037C	1.5	2.7	6.5	2.1	0.9	1.3	2.9	1.2	2.1	1.6	3.9	0.8	2.3	1.0	0.8	1.5	1.3	2.6	4.58
YGL047W	1.0	1.9	1.6	2.3	1.3	1.5	1.7	1.1	4.5	5.7	1.9	1.1	2.6	2.3	1.7	2.9	1.1	1.2	0.97
YGL053W	1.5	1.5	1.2	2.5	2.0	2.7	3.7	1.2	3.3	2.4	1.3	1.3	3.3	1.1	1.1	3.9	2.2	3.7	1.26
YGL199C	1.1	1.7	1.7	1.0	0.7	0.7	1.3	0.7	0.1	0.1	0.9	0.9	2.0	0.8	1.6	1.6	1.2	1.0	0.36
YGR101W	1.0	1.3	1.2	1.1	1.2	0.9	1.5	0.8	4.0	1.4	2.0	1.0	2.4	0.9	1.1	2.0	1.0	1.1	1.04
YGR130C	0.9	0.7	0.6	1.6	1.4	0.9	1.3	0.9	2.0	1.5	0.8	0.7	1.9	0.9	1.2	2.2	1.3	1.6	0.78
YGR154C	1.8	2.9	2.2	0.5	1.2	1.4	2.0	1.7	25.2	9.1	1.5	0.9	2.5	2.2	0.7	2.0	1.0	1.2	0.36
YGR221C	0.9	2.2	0.9	1.4	0.9	3.0	1.2	1.1	0.7	0.7	0.5	1.6	2.3	1.4	1.5	2.7	1.3	1.3	0.29
YHR138C	2.8	1.8	2.2	2.8	1.5	3.8	3.0	1.4	5.3	4.6	1.6	1.8	4.0	3.4	2.2	3.3	5.0	7.1	1.89
YHR199C	1.9	2.0	3.2	2.0	1.2	1.1	1.1	1.0	8.6	6.0	1.9	1.1	2.1	2.0	2.8	3.3	1.1	0.9	0.63
YIL041W	1.0	1.2	2.1	1.3	0.5	1.0	0.8	0.9	1.8	1.4	1.4	1.0	2.3	1.3	1.3	0.7	0.8	1.1	1.33
YIL087C	1.3	1.9	3.4	1.6	1.4	4.1	1.8	1.1	2.4	1.8	2.8	1.1	2.4	1.3	0.4	5.6	1.7	1.6	0.68
YJL057C	1.5	1.2	1.6	1.7	1.5	1.4	2.7	1.5	7.3	6.1	2.0	1.0	2.5	1.6	1.4	1.9	1.4	1.5	0.51
YJL066C	0.9	1.2	1.2	2.5	0.8	1.4	1.6	0.8	2.0	2.1	0.8	1.0	2.2	1.0	1.3	2.8	1.4	1.5	0.43
YJL082W	1.4	0.8	2.4	1.1	1.7	0.2	0.4	0.9	1.4	2.9	1.0	1.3	2.1	0.5	3.2	0.2	0.6	0.3	2.07

YJL151C	1.0	2.4	3.2	1.2	1.3	2.2	1.4	0.8	0.5	1.6	1.0	1.3	2.4	1.3	1.0	2.5	3.5	2.4	1.69
YJL152W	0.9	1.5	1.8	1.3	1.6	1.5	1.2	0.7	0.3	1.0	1.0	1.0	1.8	1.4	0.8	1.6	2.5	1.7	0.80
YJL161W	1.7	2.2	1.5	4.6	1.1	8.0	3.6	1.4	3.1	2.1	3.7	1.0	2.5	2.2	0.6	4.4	1.9	2.1	0.44
YJL171C	2.3	0.7	2.8	1.4	1.0	2.7	1.4	0.9	1.0	1.7	2.2	1.0	2.9	1.0	1.8	1.0	3.6	2.9	1.94
YJR008W	1.6	1.5	1.2	1.7	1.4	2.2	2.9	1.1	1.8	1.9	1.4	1.3	2.0	1.2	0.9	3.3	1.5	2.7	0.87
YKL151C	1.2	3.1	1.7	2.5	1.0	2.0	5.6	1.0	3.3	3.5	2.3	1.0	2.0	1.3	1.4	3.7	1.4	1.8	1.02
YKL153W	1.1	1.4	2.0	0.7	1.0	2.9	1.1	0.7	0.8	1.4	2.1	1.1	2.4	1.1	1.5	1.1	0.9	1.3	1.60
YKL195W	0.8	0.5	0.4	1.1	1.9	2.5	2.1	1.2	3.6	2.1	1.0	1.1	2.4	1.6	0.9	1.7	1.4	1.6	1.58
YLR054C	2.0	1.5	0.4	2.4	1.3	1.2	1.1	1.1	2.7	1.1	0.7	1.1	3.2	1.1	0.7	0.9	1.6	1.1	0.14
YLR149C	1.4	1.9	3.4	2.3	0.8	1.4	1.6	1.1	6.2	5.2	2.8	2.0	3.0	1.2	1.3	2.8	1.3	3.0	0.33
YLR152C	0.7	1.3	1.1	0.9	1.1	2.1	1.4	1.2	0.6	1.1	3.6	1.0	2.8	1.2	0.8	2.8	1.5	1.8	0.46
YLR324W	0.7	1.2	0.9	1.0	1.3	1.2	1.0	1.0	3.1	1.4	0.9	0.8	2.3	1.4	1.6	1.7	1.2	1.2	0.49
YLR350W	1.2	1.9	3.2	2.3	0.8	1.6	1.2	1.0	0.6	1.4	0.9	1.8	4.5	2.8	1.6	2.9	1.6	1.1	1.52
YLR387C	0.9	1.6	0.8	0.6	1.3	1.9	1.1	1.4	7.8	3.0	0.9	1.1	3.6	1.7	1.9	1.0	1.0	1.4	1.20
YML117W	0.9	2.2	0.9	1.6	0.8	1.0	0.7	0.7	1.0	1.4	0.8	0.8	2.0	0.8	2.8	0.7	1.1	1.3	0.70
YMR009W	2.3	1.9	0.5	1.9	1.9	1.2	1.9	1.4	3.4	2.2	2.1	0.6	2.3	1.9	0.6	2.3	2.7	2.5	0.75
YMR067C	0.9	0.9	1.1	0.4	1.1	1.4	1.2	1.1	4.0	3.5	1.1	1.1	2.2	1.5	1.4	1.0	1.0	1.0	0.49
YMR097C	1.5	1.0	0.7	1.6	0.7	1.2	1.5	1.5	2.1	2.1	1.5	1.2	2.1	2.1	1.7	1.7	1.4	1.8	0.59
YMR102C	1.0	2.9	1.1	0.8	1.2	6.3	1.8	1.0	1.7	2.6	1.5	2.4	4.4	0.7	0.7	1.1	2.4	2.8	0.94
YMR107W	5.0	3.9	1.7	18.4	1.1	1.0	1.2	1.3	6.0	17.1	3.0	0.8	1.8	8.1	1.9	12.0	1.3	8.1	0.49
YMR180C	1.2	0.9	1.0	1.3	1.0	2.4	1.7	1.8	1.8	2.2	0.7	1.2	3.1	1.7	1.0	1.8	1.4	1.7	0.57
YMR184W	1.3	5.4	1.0	1.1	0.8	0.9	1.6	1.9	2.1	0.9	1.5	1.7	2.3	1.5	1.1	1.2	1.4	2.0	0.68
YMR191W	1.3	2.4	1.9	1.6	1.5	1.0	2.0	1.1	2.2	3.5	2.3	1.8	3.4	1.5	2.7	1.7	1.2	2.1	0.99
YMR295C	1.7	1.0	1.2	1.6	1.4	1.9	1.3	1.0	1.0	0.8	1.2	1.1	2.3	1.3	0.9	1.9	2.1	3.4	3.43
YMR316W	3.2	2.9	1.1	1.9	1.1	0.7	2.0	1.6	2.1	3.0	1.5	1.9	2.9	1.3	0.5	1.3	6.9	6.4	1.25
YNL044W	1.3	0.9	2.3	1.3	1.2	0.9	0.9	1.8	0.8	0.8	1.1	1.0	3.1	1.2	2.4	1.0	3.1	3.4	2.56
YNL074C	0.9	1.3	1.8	1.2	1.3	1.7	1.1	0.6	1.5	2.0	1.3	0.9	2.3	0.6	1.0	0.7	1.1	1.3	0.68
YNL092W	1.3	1.4	2.4	1.8	0.9	1.2	1.6	0.9	2.3	1.5	0.7	1.1	2.3	1.2	2.7	1.3	1.7	1.6	0.16
YNL115C	0.7	1.8	1.6	1.4	0.8	9.1	2.4	0.8	2.6	1.9	1.1	0.8	2.5	1.0	1.6	3.1	1.6	2.6	0.80
YNL156C	1.1	1.2	0.9	1.3	1.6	1.3	1.9	1.2	2.4	1.9	1.4	0.9	2.0	1.4	1.8	2.1	1.8	1.9	1.85
YNL234W	1.1	1.1	0.6	1.8	1.7	1.3	1.2	1.3	2.6	3.3	1.3	1.1	2.5	1.5	1.4	2.6	1.0	1.0	0.49

YNL281W	1.0	1.3	2.0	1.4	1.7	0.9	1.2	1.2	2.8	1.6	1.6	0.7	2.0	1.2	1.2	0.5	0.9	0.9	1.79
YNL305C	0.9	2.2	2.7	1.4	1.3	1.1	1.7	0.7	2.9	2.1	1.8	1.1	2.6	1.3	1.6	2.5	1.7	1.6	1.35
YNR068C	1.2	1.5	2.3	2.6	1.7	0.4	1.8	1.1	6.7	14.4	1.1	1.3	3.7	1.8	1.0	1.4	1.0	1.0	0.24
YOL032W	1.3	0.8	2.0	1.3	1.4	2.1	1.4	1.5	4.5	3.0	1.4	1.0	2.3	1.3	0.9	2.4	1.7	1.8	0.77
YOL036W	0.8	0.9	1.3	0.8	1.2	1.2	1.0	0.8	3.1	2.8	2.2	1.0	2.5	1.0	2.0	1.0	1.1	0.9	0.48
YOL047C	1.4	1.1	1.1	2.5	1.4	1.5	1.3	1.1	0.6	2.3	0.9	0.8	2.0	1.2	12.3	1.3	1.5	1.0	0.19
YOL071W	1.3	2.0	1.7	2.0	0.9	1.7	2.0	1.6	4.4	2.3	4.3	1.0	2.5	2.5	0.7	4.6	1.3	2.0	1.08
YOL082W	1.0	1.6	1.6	2.1	1.5	1.8	2.5	1.1	3.4	2.0	1.6	1.0	2.4	1.4	1.0	2.4	1.6	2.5	0.60
YOL083W	1.1	2.3	1.2	2.8	1.4	4.5	3.1	1.3	2.7	2.3	1.3	1.2	2.3	1.4	1.0	3.8	1.4	3.2	0.41
YOL117W	1.0	1.1	0.5	1.4	1.7	2.0	1.6	1.1	1.3	4.1	1.0	0.9	2.2	1.7	1.1	2.2	1.3	1.4	0.21
YOL131W	1.0	1.5	0.6	1.0	1.5	1.1	1.3	1.1	8.4	8.1	1.4	0.9	3.1	2.3	1.4	0.7	1.1	0.9	0.15
YOL162W	2.0	6.9	1.7	1.4	0.9	1.2	2.0	1.6	12.0	6.8	4.3	1.4	3.8	1.4	0.6	0.9	1.2	0.9	0.26
YOR019W	2.9	1.2	0.8	4.7	1.4	1.3	2.8	1.1	3.5	7.1	1.7	1.0	2.2	1.4	0.7	2.6	1.7	2.8	0.40
YOR197W	0.8	1.0	1.1	1.4	0.6	1.3	0.9	0.9	0.8	0.7	1.0	1.0	2.1	0.7	1.7	1.0	1.5	1.5	1.30
YPL087W	1.0	5.1	3.0	7.3	0.6	4.3	4.2	1.0	1.0	2.2	2.5	1.8	4.4	1.2	1.3	1.8	2.1	2.7	1.49
YPL196W	1.3	1.6	1.3	1.7	1.5	2.0	2.4	1.2	10.9	2.8	1.7	0.9	2.1	1.6	0.7	4.3	1.4	2.3	0.92
YPL206C	1.0	2.9	1.4	1.9	0.7	1.8	1.2	1.0	1.7	1.1	1.5	0.8	2.5	1.1	0.8	1.2	1.4	1.9	1.22
YPL222W	0.9	3.5	0.8	1.3	1.2	2.2	1.1	0.7	7.4	3.4	1.2	1.3	3.0	1.1	0.9	2.2	1.1	0.9	0.26
YPR023C	1.2	1.4	1.2	0.8	1.1	1.4	1.2	0.9	4.4	2.8	1.7	0.9	2.0	0.9	0.8	1.4	1.0	1.1	0.81
YPR151C	2.3	2.0	1.5	4.1	1.3	1.6	4.4	1.4	3.0	9.5	1.4	0.9	2.0	1.4	0.7	2.8	1.3	1.4	0.16
YDL222C	0.9	1.1	1.5	3.9	1.0	1.4	1.0	0.7	1.9	1.0	2.6	1.0	2.2	1.3	7.1	6.5	0.9	1.3	0.50
YEL001C	1.0	1.0	1.4	0.7	0.9	1.3	1.1	1.2	2.0	1.2	1.2	1.1	0.9	1.3	3.0	1.2	0.7	1.3	2.81
YER106W	1.3	0.7	1.3	1.2	1.6	1.1	1.0	1.2	0.4	1.8	1.0	0.9	1.0	1.5	6.8	0.9	0.8	0.8	0.25
YIL023C	1.1	1.2	2.1	1.8	1.3	0.9	1.2	0.7	3.5	1.6	1.1	0.9	1.1	0.7	5.6	1.1	1.2	1.0	0.93
YJR054W	0.8	0.9	0.3	0.9	1.0	0.7	0.9	1.6	0.6	0.7	0.7	0.9	0.4	1.2	3.1	0.6	0.9	0.9	0.52
YKL086W	1.0	1.1	2.4	2.6	0.8	1.0	0.7	1.1	8.2	20.5	0.7	0.6	1.3	2.9	5.0	0.6	0.9	1.0	0.28
YKR091W	1.5	2.3	0.9	3.5	1.6	1.0	1.3	1.3	1.0	1.6	1.1	0.9	1.0	1.9	6.3	1.6	1.6	1.3	0.45
YLR194C	2.1	2.2	1.3	3.6	1.0	0.9	1.0	1.0	0.9	1.1	1.4	1.6	4.0	1.2	3.6	0.9	1.0	0.9	0.60
YMR095C	1.1	2.0	1.6	1.0	0.9	0.7	1.2	1.2	1.4	1.4	2.1	0.8	3.4	2.2	41.7	1.0	1.0	1.0	0.23
YAL053W	0.9	0.9	1.3	2.1	0.8	1.1	0.7	0.8	1.4	0.9	2.3	0.6	1.1	0.7	2.9	1.1	1.2	1.6	1.60
YDL072C	1.3	1.1	3.5	2.1	1.4	1.5	1.8	0.8	1.1	1.5	1.4	1.2	1.6	1.8	2.6	2.6	1.6	2.8	3.25

YDL204W	1.4	1.9	4.8	3.4	1.0	5.6	3.2	1.1	2.3	2.0	3.2	0.9	3.2	2.4	3.6	8.6	1.8	2.7	0.73
YDR391C	1.2	2.0	1.3	1.6	1.2	2.8	2.0	1.4	1.5	2.7	1.9	1.4	1.8	2.3	3.5	3.0	1.8	2.4	1.05
YIL024C	1.4	1.3	1.1	2.1	1.3	1.0	1.3	1.1	2.2	1.8	0.6	0.7	1.0	1.5	3.1	1.0	1.1	1.0	0.35
YIL117C	2.5	1.2	1.0	3.3	0.8	1.2	1.5	1.8	2.3	3.5	1.8	1.4	1.3	2.6	7.5	1.0	2.6	2.6	1.22
YJL108C	1.2	1.2	1.0	2.2	1.5	0.6	0.6	1.0	0.3	0.7	1.0	0.4	0.5	1.0	4.0	0.6	1.0	0.9	0.40
YJL149W	1.2	1.8	1.5	6.8	0.8	0.7	1.3	1.0	1.5	3.8	1.5	1.1	1.9	1.1	9.0	1.4	0.8	1.2	0.28
YJL186W	0.6	0.9	1.2	0.8	0.7	0.7	0.6	0.6	0.2	0.5	0.6	0.6	0.4	0.8	2.5	1.0	0.7	0.8	1.07
YNL190W	1.0	1.4	2.6	0.9	1.0	0.5	0.8	0.8	1.1	1.1	1.0	1.0	1.3	0.6	2.6	1.3	0.7	0.8	4.72
YNL208W	1.5	3.2	2.9	2.1	1.2	1.4	0.9	1.5	2.3	3.1	2.5	0.8	1.7	1.0	2.6	0.9	1.0	1.0	1.55
YNL300W	0.7	0.3	2.9	1.5	0.9	0.4	0.4	0.9	0.1	0.2	0.9	0.8	0.7	0.8	3.3	1.0	1.0	0.8	0.39
YNR064C	0.9	0.6	0.9	1.8	1.5	2.1	0.8	0.9	0.1	2.1	0.7	0.7	1.6	0.8	6.1	1.4	1.1	1.9	2.17
YOR248W	2.4	0.7	2.9	1.3	0.7	0.2	0.3	0.7	0.1	0.4	2.3	0.5	0.4	0.5	8.8	0.3	1.0	0.8	2.47
YPL052W	1.8	1.7	0.4	1.0	1.7	1.9	1.4	1.7	2.0	4.8	1.2	1.1	1.6	3.2	3.3	1.1	1.3	1.5	0.88
YPR079W	1.0	1.8	1.3	1.5	0.9	1.0	2.3	1.1	1.7	2.8	0.8	1.0	1.3	1.3	2.9	1.9	1.4	1.5	0.42
YAR028W	1.2	1.0	0.7	1.2	0.9	3.3	1.8	1.3	1.0	0.9	0.9	0.8	1.4	1.2	0.9	1.5	1.9	2.1	1.40
YDR031W	1.5	1.1	1.7	1.5	1.2	3.6	1.9	1.4	1.1	2.7	1.2	0.9	1.3	2.5	0.8	2.4	1.3	2.5	1.23
YDR486C	1.1	1.5	1.2	0.9	1.2	2.7	1.8	1.8	2.5	5.8	1.4	1.3	1.7	2.4	1.1	2.6	1.1	1.7	1.18
YER038C	1.2	1.4	0.6	1.2	1.4	2.8	1.5	1.1	0.7	2.5	0.6	0.9	2.2	1.3	0.8	1.6	1.2	1.4	0.51
YGL136C	1.1	1.0	1.2	1.1	1.0	3.1	0.7	1.1	1.3	1.0	1.4	1.1	1.1	2.3	0.9	1.4	1.3	1.1	0.64
YGR146C	1.6	2.0	2.0	2.0	0.9	4.1	2.7	1.4	0.8	3.8	0.9	1.4	1.7	1.3	1.4	1.8	1.3	0.9	0.75
YJL020C	0.7	1.2	0.8	0.8	1.0	2.1	1.3	0.6	1.3	1.0	0.6	0.7	1.6	1.2	1.4	0.8	2.0	1.3	0.95
YLR031W	1.3	1.0	0.7	1.3	1.3	3.0	1.5	0.9	0.9	1.4	0.7	1.0	1.6	1.5	0.7	1.6	1.2	1.2	0.30
YLR205C	1.2	5.1	0.7	1.3	1.3	4.4	9.0	1.7	1.5	5.7	0.4	1.3	1.4	2.4	2.5	2.3	2.0	1.4	0.29
YMR140W	1.0	0.9	1.2	0.7	1.1	17.1	4.3	0.8	1.8	2.3	0.7	0.9	1.6	1.2	1.4	2.8	1.4	2.0	0.54
YMR195W	1.7	3.1	1.2	2.2	1.1	2.6	1.1	1.0	0.2	0.7	1.1	0.9	0.7	1.3	0.6	2.5	1.6	2.2	1.28
YOR215C	1.5	1.3	0.7	1.8	1.8	2.6	2.6	1.7	2.1	1.3	1.6	1.1	1.3	1.7	0.8	3.3	1.3	2.9	2.08
YOR382W	0.7	7.6	3.3	0.5	1.2	13.1	28.4	2.0	1.1	12.8	2.5	2.8	1.7	0.4	2.1	4.3	1.9	1.9	0.79
YPL054W	4.2	5.3	4.9	3.1	1.1	2.3	1.8	1.3	2.5	9.2	1.9	1.3	1.5	1.4	1.0	1.3	1.5	1.4	0.25
YPR127W	1.1	1.4	1.0	1.6	1.1	3.2	1.7	1.2	1.9	2.4	1.6	0.9	1.3	1.4	0.4	2.4	1.3	1.2	0.65
YAR027W	1.8	1.0	1.3	1.4	1.2	2.3	2.2	1.3	2.3	1.7	1.7	1.2	2.6	1.3	1.2	2.8	2.0	4.7	2.15
YBL057C	1.1	0.9	0.6	1.0	1.3	2.2	1.1	1.4	1.6	1.2	0.9	1.0	1.0	1.6	1.0	1.1	1.2	1.2	1.88

YBR116C	0.9	4.8	2.4	2.3	1.1	2.8	1.5	1.1	9.0	8.7	3.1	1.1	2.0	2.7	1.7	9.9	0.9	1.0	0.45
YBR147W	2.2	1.1	1.5	3.2	1.2	2.2	1.2	1.9	0.9	3.6	4.0	1.3	1.2	1.1	2.1	6.0	1.3	1.9	0.63
YBR168W	0.9	0.8	1.0	1.3	1.6	3.5	1.6	1.0	1.1	1.7	0.8	0.9	1.9	1.8	0.9	1.0	1.1	1.5	0.56
YBR246W	1.0	0.8	1.7	0.6	1.1	3.1	1.1	0.9	0.5	0.9	0.8	0.9	1.1	1.3	0.9	1.8	1.4	1.7	0.82
YBR273C	0.8	0.6	0.6	1.3	1.9	2.2	1.4	1.4	2.2	2.0	0.6	0.8	2.1	0.9	0.8	0.9	1.4	1.4	1.33
YDR003W	2.0	2.4	1.6	1.5	1.8	1.8	1.8	1.1	6.6	3.6	1.8	0.8	1.5	1.2	1.0	1.8	1.4	2.0	0.95
YDR340W	1.2	1.4	0.7	0.8	1.1	1.9	2.3	1.3	1.4	2.4	1.4	0.9	1.3	2.0	1.4	1.0	1.1	1.6	1.90
YDR357C	1.3	1.5	0.3	1.3	2.0	1.9	2.2	1.7	1.0	0.9	1.1	0.6	1.0	1.4	0.5	2.2	1.3	1.7	0.73
YDR396W	0.7	1.3	0.6	0.7	1.4	2.0	1.5	1.4	0.3	1.2	1.0	1.2	0.6	1.4	0.9	1.3	1.1	1.3	0.63
YDR434W	0.8	0.8	1.5	1.2	1.0	2.2	1.4	0.9	0.8	1.2	0.8	0.9	1.2	0.9	1.3	0.8	1.2	1.5	1.53
YDR482C	1.1	0.9	0.7	1.1	1.5	1.7	1.2	1.0	0.9	0.8	0.8	0.8	1.1	1.0	0.5	1.7	1.6	1.2	0.85
YDR520C	0.9	2.1	0.9	0.6	1.3	2.3	1.2	1.0	0.8	0.7	0.6	1.2	1.4	1.0	1.3	0.9	1.1	1.0	0.46
YDR534C	0.8	4.8	1.8	0.9	1.0	2.1	9.7	1.0	0.6	7.5	1.7	1.5	1.8	0.7	4.2	1.0	0.6	1.0	0.34
YDR539W	0.7	2.0	1.1	1.0	1.8	2.1	2.3	1.3	0.7	1.2	1.3	1.2	1.3	1.1	1.5	1.6	1.2	1.4	0.61
YER044C	1.2	1.0	2.1	1.3	1.8	3.0	1.8	0.9	0.3	0.7	1.7	0.7	0.9	1.4	0.7	3.0	1.3	2.1	1.62
YER067W	4.0	1.9	5.2	6.0	1.1	2.1	4.9	2.1	1.8	3.8	2.2	1.1	1.2	1.7	0.5	3.5	1.5	3.0	1.57
YER080W	0.8	0.8	1.5	0.5	1.1	5.3	3.0	1.4	4.0	2.7	1.2	0.9	1.8	1.1	0.8	1.9	1.2	1.3	0.55
YGL113W	0.7	0.9	0.9	0.4	1.5	2.1	0.9	0.9	0.7	0.8	0.7	0.8	1.2	0.9	1.0	1.0	1.5	0.9	0.35
YGL242C	0.8	0.9	0.6	0.8	1.4	1.9	2.0	1.5	0.9	1.3	1.4	0.9	1.6	1.6	1.2	1.1	1.5	1.4	1.32
YGR052W	1.6	0.8	3.9	4.6	1.4	2.6	0.8	1.1	0.6	1.7	0.6	0.7	1.5	1.3	0.6	7.6	1.8	4.0	0.48
YGR106C	1.2	0.8	1.9	1.3	0.9	2.0	1.1	1.0	0.7	1.0	1.2	1.1	1.0	1.2	0.9	1.1	1.0	1.7	4.60
YGR111W	1.1	2.0	1.0	1.7	1.0	2.4	1.8	1.8	3.3	2.5	1.6	0.9	2.2	1.5	0.9	2.2	1.1	2.1	0.79
YHL023C	0.7	0.6	1.3	0.7	1.1	1.8	1.0	1.0	1.3	1.1	1.0	1.1	1.9	1.0	1.0	1.1	0.9	0.9	0.32
YHL048W	1.3	1.6	2.8	1.3	1.1	3.7	2.3	1.2	0.8	1.2	0.9	1.1	1.7	1.0	2.3	2.5	1.9	3.2	4.10
YIL007C	1.2	1.0	1.1	1.0	1.4	2.0	1.3	1.2	1.1	1.4	1.2	1.0	1.1	1.7	1.1	1.9	1.2	1.5	0.69
YIR016W	1.1	1.1	1.4	1.6	1.2	2.3	1.7	0.8	1.4	1.3	1.4	1.3	1.6	1.3	1.0	2.7	1.9	2.0	0.67
YIR043C	1.2	1.6	2.2	1.8	1.3	2.4	2.2	1.0	0.8	1.3	1.4	1.3	2.0	1.4	2.5	2.6	1.4	2.5	3.90
YJL012C	0.7	0.6	1.6	0.7	1.5	1.9	0.5	1.0	0.6	1.0	0.7	1.2	1.3	1.0	1.1	0.3	0.9	0.8	1.77
YJL083W	0.9	1.3	0.8	0.9	1.1	2.8	0.7	0.7	0.0	0.4	0.3	0.9	0.8	1.1	0.9	0.6	1.4	1.0	0.34
YJL131C	0.9	0.8	0.5	1.1	1.7	2.2	1.9	1.2	0.5	1.0	0.3	0.8	1.8	1.5	1.0	2.2	1.3	1.2	0.54
YJR061W	1.0	2.1	1.0	0.7	1.1	2.0	0.9	1.9	1.6	1.4	0.8	0.9	0.8	1.5	1.6	1.1	1.3	1.1	0.34

YJR161C	1.2	2.0	2.8	1.8	0.8	2.2	2.6	1.0	0.5	1.2	1.7	1.2	2.1	1.0	2.9	2.6	2.1	3.4	3.62
YKL175W	0.7	1.1	2.1	0.9	1.4	2.2	1.3	0.9	1.1	1.9	0.8	0.9	1.7	1.0	1.6	1.1	0.9	1.0	1.71
YKR070W	1.3	0.8	1.4	1.4	1.1	2.2	1.4	1.3	3.4	2.0	1.6	0.9	1.7	1.2	0.8	2.1	1.0	1.4	0.99
YLL023C	0.7	1.3	5.9	0.9	1.0	2.6	1.5	0.5	1.1	1.5	1.6	1.2	1.6	1.1	2.5	2.8	1.6	1.4	1.66
YLR023C	1.3	1.5	0.9	1.2	1.1	2.6	1.2	0.9	0.7	1.7	1.1	0.6	1.0	1.1	0.9	0.8	0.7	0.8	0.92
YLR225C	0.8	0.7	0.4	0.7	1.6	2.4	1.6	1.2	1.0	1.2	0.8	1.2	1.3	1.4	1.6	0.8	1.2	1.2	1.41
YLR241W	0.9	1.7	1.6	2.1	0.8	1.7	0.9	1.0	1.8	1.5	0.7	0.9	2.0	0.9	2.4	1.1	1.4	1.6	1.03
YLR252W	1.3	1.3	4.6	3.0	1.0	2.8	1.6	1.1	3.1	1.4	2.5	0.7	1.3	1.3	0.9	2.7	2.2	2.9	0.96
YLR270W	1.2	1.1	2.3	1.2	1.1	3.5	3.9	1.1	3.3	2.1	2.8	1.1	2.1	1.3	1.4	2.6	1.4	2.3	1.00
YML030W	1.3	0.8	0.8	1.4	1.9	3.0	2.1	1.4	0.8	0.8	1.2	0.7	1.0	1.3	0.6	2.7	1.2	1.3	1.35
YMR148W	1.0	1.0	1.6	0.9	1.2	2.9	0.8	0.6	1.0	0.8	1.0	0.5	1.0	1.0	0.7	1.4	1.1	0.9	0.28
YMR181C	1.3	1.6	1.8	1.1	1.2	2.1	2.0	0.9	1.9	1.4	1.7	1.4	2.8	1.0	1.4	2.8	1.1	2.0	0.79
YMR298W	1.3	1.3	2.9	0.8	1.5	2.3	1.3	1.1	2.4	2.6	1.7	0.9	1.0	2.0	2.0	1.7	1.4	1.6	1.37
YNL011C	1.1	1.5	0.8	0.9	0.9	2.9	2.9	1.5	3.8	1.6	1.4	0.6	1.2	1.2	0.8	3.1	1.2	1.8	0.68
YOL129W	1.0	1.1	2.5	1.2	1.6	2.2	1.6	0.7	1.2	1.2	0.7	0.8	1.8	1.5	1.0	1.9	2.6	2.4	2.61
YOR042W	0.6	1.4	0.7	0.7	1.3	2.1	1.1	0.9	2.1	1.2	0.9	0.8	1.3	1.2	1.1	1.1	1.4	1.1	0.54
YOR052C	1.5	1.3	0.5	2.4	2.3	2.4	1.4	1.4	1.4	1.3	0.8	1.0	2.6	1.6	1.2	1.3	1.2	2.3	2.64
YOR137C	1.1	1.0	0.9	1.2	1.3	2.1	1.6	0.6	0.7	0.7	0.9	0.8	1.6	0.9	1.4	1.0	1.6	1.5	0.78
YPL156C	1.4	1.4	0.9	2.9	1.2	2.4	3.2	1.2	0.5	2.8	0.9	1.5	1.7	1.6	0.8	2.4	1.6	1.9	0.70
YPL186C	1.6	1.7	1.4	4.5	1.3	3.2	3.2	1.9	2.4	1.5	3.7	1.0	1.4	2.0	0.7	6.2	1.2	2.9	0.60
YPL216W	0.7	0.8	1.3	0.9	0.9	1.8	0.8	0.9	1.8	1.9	0.9	0.9	1.1	1.2	1.0	1.1	1.1	0.9	0.47
YPR098C	1.6	2.6	1.7	1.9	2.0	3.0	2.9	1.1	1.4	1.7	1.9	0.9	1.2	1.8	0.9	2.9	2.2	2.2	1.10
YFL062W	1.3	2.7	1.7	2.4	1.6	1.8	3.5	1.1	0.6	1.2	2.2	1.1	1.6	1.1	1.6	2.7	2.1	3.0	3.43
YJL217W	0.6	0.7	3.1	2.5	0.7	1.7	3.2	4.5	0.7	1.7	4.6	0.7	0.5	0.7	0.8	5.1	1.4	2.5	2.19
YLR126C	0.9	1.5	0.4	0.8	1.3	1.7	3.4	1.8	1.3	3.4	1.3	1.4	1.6	1.4	1.4	1.4	1.3	1.2	0.61
YNL249C	1.3	1.7	0.3	1.5	1.2	0.7	2.3	1.7	2.6	1.7	1.4	1.0	1.4	1.3	0.9	1.3	1.1	1.1	0.56
YNL336W	1.2	1.0	3.4	1.3	1.3	1.4	2.5	0.9	0.7	1.9	0.8	1.1	1.3	1.1	1.9	2.8	2.0	3.1	3.74
YBR074W	0.7	1.3	0.9	0.8	1.3	1.5	2.2	0.7	0.4	0.5	0.5	1.0	1.2	1.5	0.8	1.3	1.4	1.0	0.52
YDL248W	1.1	1.7	2.8	1.7	1.5	2.0	2.5	1.1	0.9	1.4	1.4	1.2	2.0	0.9	1.8	1.9	1.6	2.4	4.35
YDR105C	0.7	1.1	2.3	1.0	0.8	1.4	2.1	0.8	2.3	1.7	1.4	0.9	1.8	1.1	0.9	1.4	1.1	1.4	1.09
YEL075C	1.1	1.1	0.7	1.0	1.1	1.4	1.9	0.7	0.6	0.7	0.7	1.1	1.7	1.9	0.8	1.2	1.4	1.1	1.19

YER046W	1.3	1.9	0.5	1.1	1.6	1.8	2.6	1.5	1.5	1.7	1.1	1.0	1.0	1.4	0.7	2.7	2.0	1.9	0.53
YER050C	1.3	0.9	0.5	2.3	2.2	1.0	2.2	1.5	1.4	1.6	1.4	0.7	1.0	2.1	1.0	2.1	1.0	1.8	1.40
YGL250W	1.1	1.4	1.9	1.8	1.6	1.4	2.0	1.1	1.5	1.2	2.4	0.7	1.2	1.0	1.1	2.3	1.2	1.9	0.45
YGR042W	1.5	1.1	1.2	2.0	1.5	2.2	2.2	1.8	1.3	3.2	1.6	1.1	1.6	2.2	1.4	2.6	1.3	1.9	0.79
YGR053C	1.3	0.7	0.6	2.7	2.1	1.9	3.4	1.5	4.5	2.2	1.6	0.7	1.2	1.7	0.7	2.7	1.5	2.4	0.39
YGR066C	1.6	2.5	1.3	2.5	1.2	1.7	2.1	1.3	2.3	5.0	2.6	0.8	1.2	1.9	0.7	2.6	1.0	1.1	0.17
YGR247W	0.8	1.1	0.8	1.0	1.0	0.9	1.8	0.9	1.1	1.1	1.1	0.6	0.8	1.0	0.4	1.2	1.0	1.0	0.45
YGR295C	1.0	1.6	2.8	2.0	0.9	1.9	2.8	1.1	0.5	1.2	1.1	1.1	1.9	1.0	2.4	2.4	1.6	2.8	4.78
YHL044W	0.9	1.3	1.5	1.4	0.7	1.9	2.0	1.4	1.1	1.9	0.7	1.2	1.6	1.7	1.1	3.9	0.8	1.2	0.45
YHR145C	1.5	1.6	0.6	0.9	1.4	1.3	2.1	1.6	0.8	2.4	2.0	0.9	1.5	1.8	1.3	1.1	1.3	1.1	1.70
YIL058W	2.0	0.9	1.4	0.5	1.3	1.4	2.2	0.8	1.1	1.0	0.0	0.6	1.0	2.0	0.9	2.1	1.4	1.3	0.39
YIL065C	1.0	1.3	0.8	1.6	1.9	1.6	2.0	1.4	3.8	2.1	1.1	0.9	1.8	1.7	0.8	2.4	2.1	1.4	0.94
YIL083C	0.8	1.0	0.9	0.8	1.2	1.4	2.2	1.0	1.0	1.1	1.2	1.0	1.0	1.0	0.9	1.4	0.9	1.1	0.76
YJL185C	0.9	1.0	1.9	1.6	1.0	1.4	2.3	1.0	0.9	1.2	1.2	0.8	1.0	1.4	1.6	2.3	1.0	1.1	0.30
YJL213W	0.8	1.1	0.2	1.2	1.5	2.6	2.1	1.2	1.3	1.5	0.7	0.7	1.0	0.8	2.8	3.6	2.1	2.8	0.33
YKR020W	1.1	1.8	0.9	1.6	1.0	4.5	2.2	1.5	1.9	2.8	1.0	0.8	1.7	1.4	1.2	2.5	1.3	2.0	0.44
YLL025W	0.8	1.3	1.8	0.8	1.1	1.5	1.9	1.0	1.5	2.0	1.4	1.0	1.3	1.0	1.2	1.7	1.0	0.9	0.40
YLR108C	3.2	1.8	4.7	1.8	1.9	1.3	2.6	2.0	7.4	10.4	2.6	0.8	1.9	3.4	1.2	2.3	1.0	1.5	0.39
YLR290C	1.3	1.2	0.8	1.9	2.1	1.7	2.3	1.1	1.2	1.1	1.5	0.8	1.0	1.3	0.8	3.2	1.3	2.4	1.49
YNL068W	1.0	3.7	1.0	1.2	1.0	0.9	4.1	1.3	1.3	1.4	0.6	0.4	0.8	1.1	1.1	1.9	1.0	1.3	0.41
YMR178W	1.6	1.0	0.8	0.9	1.1	1.6	2.1	1.6	1.6	1.6	1.0	0.9	1.0	1.2	0.9	2.1	1.1	2.3	1.36
YNL122C	1.2	0.9	1.2	1.3	1.6	1.8	2.1	1.4	1.0	1.2	1.3	0.7	1.0	1.2	0.6	1.8	1.0	1.4	1.07
YNL285W	1.1	1.2	0.6	1.1	1.4	0.8	2.3	1.2	1.4	1.7	1.2	0.6	1.1	1.8	0.9	1.3	1.2	1.3	0.43
YNL293W	1.3	0.8	0.8	1.8	1.3	0.9	2.1	1.0	1.6	2.4	0.8	0.7	1.4	1.1	1.2	2.1	1.0	1.4	0.58
YNR061C	0.8	1.1	2.5	0.8	1.0	1.3	2.6	0.8	0.8	0.9	1.2	0.9	1.1	1.3	0.9	1.1	1.6	1.1	1.52
YOR220W	1.5	1.4	1.7	2.4	1.3	1.2	2.1	0.9	1.8	2.5	1.2	1.2	2.9	0.8	0.7	2.0	3.5	3.4	1.44
YPR077C	1.4	1.4	1.2	2.7	1.4	1.2	2.0	1.5	0.6	2.5	0.8	1.0	0.8	1.6	2.9	0.6	1.4	1.2	0.24
YPR147C	0.9	0.8	1.1	1.4	1.6	2.1	1.8	1.1	1.2	2.4	1.3	0.9	1.6	1.1	1.4	1.9	1.1	1.3	1.18
YEL041W	1.4	1.4	0.8	2.5	0.8	1.2	1.9	1.9	2.4	3.6	3.5	0.9	1.9	2.0	1.4	1.9	1.5	1.9	0.39
YKL187C	0.9	1.0	1.4	1.5	0.8	0.8	0.7	1.1	5.2	8.6	3.3	0.9	1.4	1.6	1.2	4.8	0.7	1.2	0.36
YBR285W	1.6	1.6	0.9	6.2	1.3	2.2	1.5	1.0	4.0	3.1	4.6	0.5	0.9	1.6	0.4	7.8	2.5	2.3	0.27

YBR292C	0.8	4.3	1.2	0.6	1.0	0.8	0.7	0.8	2.1	1.3	1.8	0.4	0.7	1.1	1.0	1.0	0.9	0.9	0.30
YDL123W	1.0	1.3	3.7	1.4	0.8	0.7	1.0	0.8	2.0	2.0	4.6	1.1	1.5	0.9	3.3	1.5	1.1	1.0	0.52
YDR056C	1.4	1.3	2.0	2.0	0.9	1.0	1.4	1.4	1.3	2.3	2.3	1.2	1.0	2.3	1.1	2.5	1.2	2.0	1.83
YDR132C	3.7	1.6	1.4	2.1	1.2	1.9	1.7	2.3	5.9	7.3	3.3	0.9	1.5	1.4	1.2	1.2	1.0	1.3	0.40
YDR154C	1.0	2.1	2.5	1.7	0.8	1.5	0.9	1.1	1.5	1.2	3.2	1.0	2.6	1.0	1.8	1.3	1.5	2.0	2.69
YDR295C	0.8	1.0	0.6	1.0	0.9	1.0	0.8	1.3	2.6	1.3	1.9	0.7	1.8	1.1	1.4	0.6	0.8	1.0	0.49
YDR494W	0.9	0.9	0.2	1.3	1.3	1.4	1.7	1.2	1.2	0.9	1.6	0.8	1.0	1.0	0.6	1.9	1.1	1.3	1.39
YEL072W	3.2	3.5	1.6	1.8	1.5	0.6	1.3	1.6	4.7	4.3	1.7	0.9	1.0	2.0	0.5	1.5	0.8	1.1	0.39
YER045C	1.6	2.1	1.2	1.0	0.9	0.8	1.1	1.4	2.0	1.5	2.3	0.8	1.2	1.3	1.4	1.6	1.1	1.1	0.34
YER181C	1.1	0.4	1.7	2.2	1.0	0.7	1.0	0.9		0.8	0.1	0.6	1.3	1.0	0.7	0.7	0.7	1.1	0.42
YGL114W	1.5	0.8	3.6	1.3	1.3	0.7	1.0	1.1	2.7	5.6	3.2	0.6	1.2	1.1	1.2	1.4	0.9	0.8	0.60
YGL193C	1.1	0.9	0.9	1.4	0.7	0.7	1.0	0.7	0.8	1.0	2.1	0.7	1.1	1.0	1.0	1.7	1.1	0.9	0.62
YGL204C	0.9	2.2	1.2	1.2	0.7	0.3	1.3	0.8	1.0	0.9	1.9	0.8	1.4	1.8	0.8	1.1	0.9	0.9	0.38
YGL259W	1.1	1.6	1.4	1.5	1.1	0.8	1.6	1.3	2.6	2.2	2.7	1.1	1.9	1.1	1.3	4.1	0.9	0.9	0.49
YIL060W	1.0	2.3	0.8	1.0	1.2	0.7	0.9	1.8	0.9	3.0	1.9	0.7	0.6	0.9	1.3	1.1	1.2	0.9	1.22
YJL036W	1.3	1.0	0.6	1.6	0.7	1.1	1.5	1.5	6.6	3.5	1.7	1.2	2.2	1.5	1.1	2.1	1.4	1.6	0.88
YJR085C	1.0	1.9	2.8	4.5	0.6	1.5	1.4	0.9	3.7	2.6	2.9	1.1	1.9	1.9	0.5	2.0	1.4	1.9	2.19
YKR071C	3.6	1.6	1.0	1.1	1.9	0.6	0.9	2.1	4.7	4.9	2.3	0.8	1.5	1.6	0.7	0.8	0.9	1.0	1.05
YLR145W	0.9	1.1	0.6	1.5	1.1	0.6	0.9	1.1	1.9	1.2	2.4	0.8	0.7	1.6	1.0	2.5	1.0	0.8	0.62
YLR156W	1.3	1.0	0.7	0.8	0.8	0.6	1.3	1.0	1.1	2.2	1.9	0.8	1.9	1.0	1.0	1.7	1.1	0.9	0.31
YLR280C	0.6	1.4	0.4	0.6	1.3	0.9	1.5	1.0	0.5	1.3	2.1	0.8	1.6	0.5	0.6	1.2	1.2	0.9	0.19
YLR311C	1.5	1.9	2.8	2.9	0.9	0.4	1.1	1.0	0.9	3.0	7.8	0.9	0.9	1.6	0.5	1.9	1.3	1.1	0.33
YMR034C	1.5	1.3	1.0	6.5	1.3	1.1	1.9	1.2	0.7	2.7	2.1	0.9	1.8	1.4	1.7	1.3	1.8	1.6	0.43
YNL240C	0.8	0.8	0.8	0.6	0.8	0.7	0.7	0.9	5.4	3.1	3.4	0.7	1.1	0.8	1.4	0.8	0.8	0.7	0.37
YNL260C	1.7	1.8	0.5	1.0	1.6	0.8	1.1	1.2	3.8	2.0	2.5	0.6	0.7	1.4	0.7	1.2	0.9	1.0	0.75
YNR074C	1.3	1.7	3.1	1.4	1.2	0.7	1.4	1.5	3.9	3.0	2.7	0.6	1.5	1.7	0.8	0.9	0.9	0.8	0.66
YOL084W	1.0	1.4	1.6	3.6	0.6	1.6	0.8	1.0	2.6	3.4	6.1	1.7	6.4	0.9	1.6	6.6	1.3	1.6	0.28
YOL159C	1.9	2.4	1.7	2.0	0.9	1.0	2.1	1.2	1.1	2.4	6.6	1.2	1.4	1.8	1.1	2.3	2.0	1.6	0.61
YOR228C	1.3	1.1	1.8	1.4	1.2	1.0	1.2	0.7	1.4	1.1	2.8	0.9	1.1	1.0	0.6	3.4	1.0	1.4	0.44
YOR255W	2.5	2.7	1.0	1.5	1.0	0.5	0.9	1.2	0.3	0.8	2.0	0.7	1.6	1.3	4.9	1.2	1.0	1.0	0.19
YBR047W	2.7	2.4	1.1	1.5	0.9	1.1		2.2	11.0	10.0	3.4	0.8	1.7	1.0	0.8	1.1	1.3	1.0	0.25

YER124C	0.5	17.3	0.7	1.2	1.4	2.1	1.0	1.8	0.4	1.4	1.5	0.6	0.7	0.5	0.5	1.5	0.9	1.1	2.22
YKR007W	0.8	0.9	0.8	0.9	1.1	1.6	1.5	1.9	1.1	1.8	1.3	0.8	0.9	1.2	1.2	1.1	0.8	0.9	0.73
YOR007C	1.1	3.3	1.4	0.9	1.1	1.2	0.4	2.1	5.6	2.5	1.8	0.7	0.7	0.8	1.3	1.0	1.2	0.8	2.26
YBL065W	1.2	2.9	1.0	3.5	1.1	0.7	1.0	1.9	20.8	4.2	1.3	0.7	1.8	1.9	3.1	0.9	1.1	0.9	0.15
YDL113C	1.0	1.4	1.2	1.2	1.0	1.2	2.2	1.7	3.8	3.0	1.1	1.3	1.5	1.2	1.2	1.7	1.2	1.5	0.58
YDR018C	1.5	1.3	3.3	2.6	1.3	1.5	1.4	1.4	2.3	4.4	1.4	1.1	1.8	1.7	1.0	2.6	0.9	1.2	0.22
YDR202C	1.1	1.2	1.1	1.3	1.3	1.7	1.6	1.4	4.8	2.4	1.3	0.8	1.2	2.0	0.5	2.8	1.0	1.6	0.79
YDR223W	1.3	4.6	2.0	1.9	1.1	1.4	1.0	1.0	2.7	4.6	1.4	1.0	1.5	1.2	1.2	3.5	0.9	1.0	0.29
YDR350C	0.9	1.5	0.4	1.3	1.3	1.3	1.5	0.9	2.8	2.5	0.9	0.9	1.0	1.1	1.6	1.3	1.4	1.2	0.53
YDR374C	1.9	2.9	1.5	0.8	1.3	1.1	0.9	1.8	10.4	3.9	1.4	1.0	2.5	4.0	2.0	1.3	1.0	1.0	0.36
YDR512C	1.8	4.3	2.5	2.3	0.7	2.1	2.0	1.6	3.6	4.0	1.8	1.1	1.9	2.7	1.1	3.0	1.3	2.0	0.82
YFR017C	1.1	1.4	4.4	4.4	1.2	1.2	1.3	0.8	1.0	7.1	3.1	1.8	1.7	1.3	1.4	3.7	0.9	1.1	0.49
YGL046W	1.6	1.2	1.5	1.4	0.9	1.2	1.0	1.2	0.8	4.5	1.5	1.1	1.6	0.9	2.0	1.2	1.5	1.3	0.42
YGL067W	1.6	1.3	1.7	1.1	0.6	1.0	1.1	1.2	1.0	2.3	1.7	0.9	3.7	1.6	0.7	1.0	0.9	1.1	0.63
YGL098W	1.2	0.8	0.5	1.7	0.8	0.7	1.2	1.3	1.2	2.4	1.3	0.8	0.8	1.1	0.7	1.3	1.1	1.5	0.77
YGL117W	2.3	0.6	0.5	2.0	0.9	0.9	1.3	1.9	0.5	5.8	1.4	1.5	1.4	2.0	1.4	0.6	2.1	1.1	1.05
YGL146C	0.9	1.0	1.1	3.3	1.3	1.2	1.3	1.2	0.9	3.2	1.3	0.9	1.1	1.2	1.1	2.2	1.0	1.0	0.43
YGR011W	1.1	1.5	1.0	1.3	0.9	1.1	1.8	1.4	7.4	9.4	2.3	0.8	1.6	3.9	1.8	1.6	0.9	1.0	0.40
YGR153W	1.5	0.9	1.0	1.1	1.6	0.9	1.4	1.8	2.7	2.5	1.0	0.7	1.1	1.9	1.3	1.1	1.3	1.7	0.39
YGR223C	1.8	1.2	1.5	1.3	1.3	1.2	1.2	1.4	6.2	3.8	1.9	0.8	1.8	1.6	1.2	1.8	1.1	1.8	0.66
YHR116W	0.9	1.2	0.9	2.1	1.6	1.5	1.8	1.1	1.5	2.7	0.9	0.8	1.9	1.4	1.2	1.9	0.9	1.5	0.60
YIL097W	1.2	1.0	1.3	1.2	1.2	2.0	1.6	1.7	4.9	3.4	1.4	1.1	1.4	1.4	1.2	2.1	1.1	1.7	0.52
YKL133C	1.3	12.7	2.4	2.0	1.0	1.7	3.2	1.5	4.1	5.9	1.4	1.3	1.4	1.6	1.7	3.8	1.2	2.4	0.35
YKL162C	1.3	1.0	1.9	0.9	1.1	1.7	1.4	1.5	6.7	4.7	1.6	1.1	1.1	1.9	1.6	2.0	0.8	1.1	0.25
YLL062C	6.5	6.7	4.6	1.1	0.8	0.9	0.7	1.8	14.9	5.4	1.7	0.6	1.4	1.7	1.6	1.0	0.9	0.9	0.29
YLR247C	0.8	1.5	1.0	1.0	1.2	1.2	1.2	1.3	2.5	2.9	1.6	1.0	1.8	1.0	1.4	1.4	1.2	1.3	0.48
YLR267W	0.9	1.7	1.3	1.4	1.2	1.3	1.4	1.4	1.1	4.6	1.7	0.8	1.5	2.3	0.7	3.6	1.2	2.8	0.24
YMR041C	1.2	2.8	1.4	1.2	1.1	0.5	0.5	1.4	6.5	6.0	1.6	1.0	1.1	0.6	0.5	0.3	0.8	0.4	0.84
YMR253C	0.9	1.7	2.0	1.3	0.8	1.7	2.3	1.0	1.5	2.8	1.0	0.5	1.2	1.3	0.9	1.3	1.2	1.4	0.42
YOR225W	1.1	2.8	1.4	1.0	1.3	0.7	0.8	0.8	0.8	3.3	1.2	0.5	0.6	2.2	0.7	0.6	0.9	0.9	0.26
YPL166W	1.0	1.4	1.4	1.4	1.2	0.7	1.8	1.2	1.5	3.1	1.4	0.8	1.4	0.8	1.2	2.3	1.1	1.6	0.39

YPL202C	1.1	1.6	1.0	0.7	1.9	1.4	1.6	1.1	1.8	3.5	1.0	0.7	1.1	0.9	1.0	1.2	1.1	1.0	0.56
YBR101C	1.3	2.2	1.7	1.1	1.2	0.8	0.6	1.0	6.9	3.0	1.3	0.7	1.6	0.7	0.5	0.3	0.9	1.0	1.83
YBR269C	1.2	5.7	2.2	1.1	1.3	1.8	1.3	0.8	2.7	2.6	1.2	1.0	1.3	1.4	0.4	1.6	1.5	1.6	0.58
YBR280C	1.2	1.0	2.7	2.0	1.3	1.6	1.7	1.0	5.3	1.9	1.3	1.3	2.8	1.3	1.0	3.2	1.1	1.7	0.33
YDL234C	1.9	0.9	0.5	1.4	1.0	1.1	1.9	1.3	4.6	2.1	1.5	0.9	3.5	0.7	1.0	2.5	2.3	3.6	0.94
YDL242W	1.3	1.3	1.6	1.5	1.3	0.7	1.1	0.5	4.0	4.1	1.3	1.0	1.0	1.0	1.2	1.3	0.9	1.0	0.38
YDR531W	0.8	0.9	0.7	1.0	2.0	1.2	1.6	1.4	2.9	1.5	1.3	0.9	1.4	1.2	0.9	1.2	1.5	1.2	1.32
YFR042W	1.5	1.2	1.9	1.9	1.8	0.8	1.6	1.0	2.8	2.6	1.7	1.1	1.9	1.7	1.4	1.4	1.7	1.7	1.17
YFR046C	1.1	2.3	1.1	1.6	1.2	1.0	1.0	1.5	5.8	1.5	1.0	0.9	1.1	1.4	0.9	1.3	1.2	1.2	0.29
YGL227W	1.0	0.8	0.9	0.7	1.2	1.1	1.2	1.0	2.4	1.9	1.1	0.8	1.0	1.3	0.9	1.5	1.1	1.3	0.59
YGR089W	0.8	0.8	0.9	0.5	1.1	1.2	0.9	0.8	4.0	1.4	0.9	0.7	0.8	1.1	0.8	0.9	0.9	1.1	0.50
YGR134W	1.1	1.5	0.5	1.3	1.3	1.0	1.0	1.5	2.4	1.9	0.9	0.7	1.5	1.1	1.1	0.7	0.9	0.8	0.33
YHR017W	0.8	1.0	1.3	1.3	1.4	1.1	1.5	1.5	2.9	1.7	1.5	1.0	1.2	1.2	0.8	2.5	1.1	1.7	0.90
YIL152W	1.1	1.3	1.0	1.7	1.0	0.8	1.2	1.0	3.1	1.8	0.9	1.1	1.4	1.7	0.9	1.5	1.1	1.0	0.81
YIL164C	1.2	1.2	1.0	1.2	1.0	1.1	2.0	1.2	4.2	3.0	1.0	1.0	1.8	2.0	0.9	2.5	1.4	1.4	0.54
YJR056C	1.0	2.4	0.8	1.2	0.9	0.5	0.9	1.2	3.5	1.4	0.8	0.8	0.9	1.4	1.6	1.3	0.9	1.1	0.44
YJR072C	0.7	2.5	1.0	0.8	1.1	0.7	0.8	1.3	3.1	1.6	0.9	1.0	1.1	1.2	0.6	0.9	0.8	0.8	0.78
YKL034W	0.8	1.4	1.0	0.9	1.1	1.9	1.4	0.7	2.6	3.7	1.2	1.0	1.9	1.0	1.6	1.5	1.3	1.2	0.41
YKR012C	0.7	1.4	1.0	1.0	1.2	1.4	1.0	1.0	3.9	1.2	0.8	0.7	1.5	1.4	1.2	0.9	1.0	0.9	0.61
YLR064W	1.1	1.1	2.9	1.3	0.8	1.2	0.8	1.0	3.3	2.1	1.6	0.7	1.6	1.4	1.5	1.0	0.9	1.0	1.49
YLR364W	3.3	8.0	1.2	1.5	1.3	1.0	1.0	1.1	8.3	1.3	1.5	0.7	1.0	3.0	1.9	1.0	1.0	0.9	0.37
YLR421C	1.1	1.3	0.9	1.2	0.9	2.6	1.5	1.5	4.5	3.3	1.2	0.9	1.6	1.6	1.6	1.9	1.2	1.8	2.07
YML118W	1.5	0.5	0.7	2.7	0.7	0.8	1.5	0.9	6.6	1.6	1.3	0.9	1.7	1.0	2.2	1.6	1.5	1.5	0.26
YMR114C	1.2	1.4	0.5	2.4	1.2	1.2	1.7	1.1	2.5	1.7	1.0	0.9	1.1	1.5	1.2	3.0	1.0	1.3	0.62
YMR115W	1.0	0.6	1.3	1.1	0.9	1.5	1.0	1.2	5.8	2.1	1.1	1.0	1.3	1.3	1.2	1.1	1.0	1.2	0.61
YMR258C	0.9	1.4	1.2	1.1	0.7	1.2	1.5	0.9	2.3	1.8	1.4	0.9	1.6	1.0	0.6	1.2	1.1	1.3	0.60
YNL181W	1.2	1.2	0.6	1.2	1.4	1.6	0.9	1.9	5.3	2.8	1.2	0.8	1.8	1.9	1.0	1.0	0.8	1.3	0.86
YNL191W	1.5	5.1	4.7	0.7	0.9	0.6	3.0	1.2	3.9	3.2	1.0	0.5	0.6	1.0	1.0	0.6	0.5	0.6	0.45
YNL212W	1.1	1.1	1.1	0.5	0.9	0.8	1.3	1.3	4.6	2.3	1.3	0.8	1.3	1.0	0.9	1.3	0.9	1.2	0.67
YNL265C	1.0	1.3	0.5	1.3	0.9	1.9	1.5	1.4	5.0	2.6	0.9	0.8	2.0	1.9	0.6	1.7	0.9	1.8	0.85
YOR088W	0.7	0.9	1.7	0.9	1.2	0.7	0.3	0.7	2.5	1.3	0.8	0.6	0.4	0.4	0.8	0.4	0.7	0.7	3.56

YOR155C	0.8	1.2	1.7	1.0	1.4			0.8	3.6	1.7	1.6	0.5		1.5	0.9		0.8	0.9	0.46
YPL151C	1.0	0.8	1.2	1.2	1.0	0.7	0.7	1.0	4.2	2.0	0.9	0.8	1.4	0.9	1.8	0.9	0.8	1.0	0.51
YPL249C	0.8	0.9	1.1	0.6	0.8	2.5	1.0	1.0	3.0	1.2	0.9	0.9	1.8	1.0	1.0	1.0	0.8	1.2	0.36
YPL260W	0.9	3.9	1.4	0.8	0.8	1.4	1.2	1.1	2.6	2.1	1.0	0.8	1.4	1.1	1.3	1.2	0.8	1.3	0.82
YPR061C	1.3	3.2	1.2	4.9	1.4	0.5	1.8	1.2	3.2	1.9	1.6	0.8	1.1	1.7	0.4	2.7	1.1	0.9	0.40
YPR093C	1.1	1.1	0.7	1.3	1.0	0.7	0.8	1.1	6.6	2.3	1.2	0.9	1.4	1.1	0.8	1.4	1.4	1.1	0.39
YPR158W	1.5	1.5	3.7	0.9	1.6	0.7	1.2	1.2	5.0	3.5	1.5	0.6	1.6	1.1	0.9	0.6	0.9	0.7	0.96
YPR169W	0.9	0.9	0.5	0.6	1.0	1.5	0.9	1.0	3.5	1.4	1.0	0.5	1.0	1.0	0.9	1.4	1.1	1.1	0.86
YPR174C	0.8	0.9	0.8	0.6	1.3	1.1	0.8	1.2	3.2	1.0	0.7	1.1	1.4	0.9	1.2	0.4	1.4	0.9	0.55
YAL014C	1.0	1.6	1.4	1.2	0.8	0.6	1.2	1.2	3.1	2.0	1.7	1.2	1.5	1.8	2.3	0.9	1.1	1.1	0.56
YAL017W	0.6	1.4	2.3	1.2	1.0	1.1	1.3	0.6	1.9	1.6	0.7	1.0	2.2	1.1	1.0	1.3	1.0	1.2	0.79
YAL049C	1.0	2.0	1.7	1.0	0.7	1.5	3.4	1.4	3.0	1.4	1.0	1.1	1.6	2.0	1.4	2.9	1.6	1.8	1.13
YBR013C	1.1	2.7	1.8	1.4	0.9	1.8	1.0	1.4	2.2	2.2	1.2	1.2	2.0	2.5	1.1	1.5	1.4	1.1	0.68
YBR051W	1.2	0.8	1.5	0.3	1.1		1.1	1.1	1.5	1.5	0.1	0.7	1.2	1.0	0.8	1.2	1.1	0.8	0.40
YBR063C	0.8	0.8	0.4	0.6	1.2	1.6	1.6	1.3	2.2	1.6	0.6	1.1	1.7	1.7	1.6	1.0	1.2	1.2	0.38
YBR129C	1.1	0.8	0.6	1.0	1.2	1.9	1.0	1.4	2.3	1.4	1.4	1.0	1.3	1.6	0.9	1.7	1.0	1.5	1.25
YBR255W	1.1	1.6	0.4	0.7	1.2	1.0	1.1	1.8	1.8	1.5	1.5	0.7	1.4	1.1	1.0	1.5	1.0	1.0	0.27
YBR281C	0.8	1.1	3.0	0.5	0.8		0.6	1.2	1.8	1.4	1.4	0.5	1.2	0.9	1.0	0.8	0.7	0.8	0.44
YCL044C	0.8	1.4	2.4	0.6	1.1	1.0	1.0	1.0	3.3	4.1	1.1	0.9	1.7	1.0	4.4	0.8	0.9	0.6	0.21
YDL089W	1.1	1.3	1.4	0.9	1.2	2.0	2.0	1.1	2.3	2.5	2.0	0.9	1.9	1.2	1.6	1.3	1.0	1.1	0.45
YDL173W	1.0	1.2	1.0	0.8	1.3	1.1	1.6	1.5	1.8	1.6	1.2	1.1	1.7	2.1	1.1	1.3	1.3	1.8	1.19
YDL193W	0.9	1.5	1.4	0.8	1.1	2.0	1.5	1.6	2.5	1.4	1.1	1.1	1.4	1.1	1.2	1.8	0.9	1.4	0.93
YDL233W	0.8	2.0	1.0	3.8	0.9	1.0	0.8	1.0	2.1	1.1	0.7	0.9	1.8	1.1	1.3	0.9	1.1	1.4	0.33
YDR071C	1.4	1.1	0.7	1.3	1.1	1.5	1.3	1.6	2.6	1.6	1.4	0.9	1.3	2.0	0.9	1.2	0.9	1.6	3.08
YDR078C	1.1	1.6	3.5	0.8	0.9	0.8	2.8	1.4	2.1	1.4	1.1	0.7	1.1	1.8	0.5	1.3	0.9	1.2	0.53
YDR109C	0.8	1.0	1.0	1.3	1.0	0.9	1.2	1.5	1.9	1.3	0.9	1.0	1.4	1.0	1.7	1.5	1.2	0.9	0.38
YDR140W	1.7	1.4	0.9	1.8	0.7	0.9	1.2	1.5	2.2	2.5	1.7	1.1	2.0	3.2	0.9	1.9	1.3	1.3	0.78
YDR221W	0.8	1.3	0.3	0.8	1.1	1.5	0.9	1.0	2.3	1.4	0.7	0.6	1.0	1.0	1.0	1.0	1.1	1.0	0.34
YDR271C	1.0	0.8	0.7	1.7	0.8	1.4	1.3	0.8	5.4	0.9	0.6	0.7	1.5	1.4	1.3	0.6	1.2	0.9	0.32
YDR316W	1.0	0.8	0.6	0.9	1.5	0.7	0.3	1.4	2.5	1.0	1.3	0.6	0.6	0.7	1.3	0.3	0.6	0.5	0.69
YDR338C	1.1	1.3	1.4	1.0	0.7	0.9	1.1	0.9	2.7	1.7	1.9	0.8	1.3	1.0	0.8	0.8	0.9	1.0	0.40

YDR421W	1.1	1.0	1.0	1.1	0.9	0.5	0.2	0.9	3.8	1.2	1.0	0.7	0.6	1.2	1.9	1.0	0.7	0.8	0.42
YDR425W	1.3	1.7	1.0	2.2	1.4	1.7	1.8	1.2	2.6	2.2	0.9	1.1	1.4	1.3	1.3	1.1	1.2	1.2	0.31
YDR485C	0.8	0.9	0.7	0.9	1.6	1.2	1.2	1.1	2.7	2.0	0.9	0.9	1.2	1.1	1.3	1.5	0.8	1.0	0.59
YDR504C	1.0	1.0	0.9	0.8	1.1	1.2	1.1	0.8	2.3	1.1	1.2	0.7	2.2	1.3	1.2	1.2	1.2	1.2	0.70
YEL044W	0.8	1.5	0.7	0.9	1.2	0.8	0.8	0.8	2.1	1.2	1.6	0.6	1.3	0.6	0.6	0.7	1.4	1.0	0.93
YER092W	1.3	1.3	1.2	1.1	1.2	1.5	1.3	1.1	1.9	1.6	0.9	0.9	1.2	1.2	1.0	1.9	1.4	1.7	1.13
YER182W	1.2	0.8	1.1	1.9	1.2	0.6	0.8	1.4	2.2	1.2	1.5	1.0	0.9	1.9	0.5	3.6	0.8	1.2	0.87
YFL042C	0.8	0.9	0.6	1.1	1.4	1.5	1.1	0.8	2.0	2.0	5.4	0.9	1.7	1.2	1.1	1.0	1.1	1.2	0.43
YFR056C	0.9	1.5	0.7	0.5	1.2	0.3	0.9	1.0	2.4	2.7	1.3	0.5	0.3	0.6	0.9	0.5	1.1	0.8	0.59
YGL041C	0.9	0.6	1.3	1.0	0.6	1.4	1.0	0.8	1.3	0.4	0.6	0.6	1.0	1.2	0.7	0.8	1.0	1.1	0.51
YGL045W	1.4	1.1	1.9	3.4	1.0	0.8	1.7	1.2	2.8	4.2	1.2	1.1	1.3	1.1	1.5	3.4	1.3	1.2	0.47
YGL057C	1.3	1.1	1.4	1.4	1.3	1.3	1.1	1.1	2.1	1.1	1.3	1.1	1.3	1.5	0.7	1.2	0.9	1.1	0.56
YGL183C	1.1	1.4	0.8	0.5	1.6	1.2	1.2	0.8	3.4	2.5	0.8	0.9	1.5	1.7	1.7	0.6	1.4	1.0	0.18
YGL223C	1.1	1.7	1.0	0.7	1.4	1.1	1.2	1.0	2.6	2.0	1.3	0.9	1.7	0.9	0.7	1.1	0.8	1.0	0.60
YGR156W	0.9	1.3	1.7	1.2	1.0	1.2	1.3	1.3	4.0	2.4	0.5	1.2	1.8	1.6	1.3	0.5	0.8	0.8	0.26
YGR198W	0.7	0.9	0.7	1.0	0.8	0.8	0.8	1.0	2.9	1.8	1.0	0.7	1.3	0.8	0.9	1.2	1.1	1.0	0.87
YGR210C	0.9	1.4	1.1	0.9	0.8	0.8	0.8	1.0	3.5	1.8	1.0	0.6	1.0	0.8	1.3	0.7	1.1	0.7	0.56
YGR211W	0.7	1.0	2.0	1.0	0.9	0.6	0.5	1.0	2.9	2.5	0.8	0.6	0.8	0.4	0.5	0.3	0.5	0.5	1.99
YGR237C	0.8	1.3	2.5	0.8	1.2	0.7	1.4	1.0	1.8	1.4	1.6	0.8	1.6	0.6	1.1	1.2	0.9	1.0	0.50
YGR250C	1.3	1.4	1.4	1.5	1.4	1.6	1.2	1.1	2.4	2.8	1.6	0.6	1.7	1.3	1.2	1.2	1.3	2.1	1.21
YGR266W	0.7	0.5	1.0	0.9	0.8	1.2	0.9	0.9	2.0	1.1	1.2	0.6	1.1	0.8	1.1	1.3	0.7	1.0	0.59
YGR277C	1.0	1.9	1.1	0.8	0.8	0.8	1.9	1.3	2.8	1.5	1.2	0.9	1.6	1.5	0.9	1.0	1.3	1.1	0.81
YHL021C	1.6	3.9	5.9	3.2	0.9	1.4	2.7	1.0	2.7	1.1	1.4	1.1	2.6	1.1	1.2	2.4	1.3	3.6	1.27
YHL037C	1.2	1.4	0.9		1.0	0.7	1.0	1.1	0.4	1.1	1.0	0.6	1.0	0.9	0.8	0.7	0.9	0.9	0.28
YHR083W	1.0	0.9	1.4	1.3	0.9	0.9	1.0	1.0	2.0	2.1	1.3	0.9	1.1	1.6	1.3	2.4	0.8	1.0	0.90
YHR134W	1.1	0.7	0.4	1.1	1.1	2.0	1.3	1.2	3.5	1.5	0.7	1.0	1.2	1.6	1.0	1.2	1.3	1.3	0.81
YHR180W	1.5	0.7	1.1	1.5	0.9	1.1	1.1	1.2	4.8	3.5	1.4	0.7	1.3	1.5	0.8	1.3	0.8	1.0	0.36
YIL108W	1.0	1.7	2.2	0.7	1.3	0.6	0.9	0.8	2.4	2.0	1.2	0.7	1.3	1.0	1.8	0.7	1.2	0.7	0.51
YIL165C	1.2	2.3	0.9	1.6	1.6	0.8	1.5	1.1	3.2	3.4	1.1	0.9	1.5	1.3	0.8	1.9	1.4	1.3	0.74
YJL032W	1.1	1.0	0.8	0.9	0.9	0.6	0.9	1.3	3.3	2.0	1.8	0.5	1.4	1.6	1.0	1.2	1.1	1.1	0.33
YJL049W	1.3	0.8	0.5	1.8	1.6	1.5	1.2	1.5	2.0	1.9	1.5	0.8	0.9	1.8	0.8	1.6	0.9	1.1	0.75

YJR044C	1.1	1.2	5.1	1.0	1.0	1.5	2.0	1.0	2.2	1.6	1.9	0.7	2.0	1.3	1.6	2.7	1.8	1.6	1.18
YKL059C	0.8	1.0	0.9	0.7	1.0	0.9	1.0	1.0	2.6	1.2	0.9	0.9	1.3	1.1	1.1	0.8	1.1	0.9	0.53
YKL090W	1.0	0.9	1.0	1.2	1.1	1.0	1.1	1.2	3.9	1.6	2.3	0.6	0.8	1.4	0.8	1.6	0.7	1.0	0.37
YKL094W	1.2	1.6	1.2	1.9	0.9	1.0	1.1	1.3	3.1	1.8	1.3	0.9	1.7	1.3	1.0	2.0	1.2	1.9	1.60
YLR097C	1.1	1.5	1.0	1.6	1.6	1.7	1.8	1.4	2.2	1.1	1.7	0.8	1.1	1.7	0.9	2.5	1.1	1.7	0.76
YLR226W	1.0	1.8	0.3	1.0	1.7	1.1	1.9	1.3	2.1	1.4	0.8	0.7	0.7	1.1	1.3	0.9	1.1	1.0	0.56
YLR392C	1.1	0.9	0.8	1.9	1.0	1.2	1.0	1.3	2.4	2.1	1.4	0.6	1.4	1.1	0.5	2.1	0.8	1.6	0.46
YLR427W	0.6	1.0	0.2	0.5	1.6	1.0	1.2	1.1	2.1	1.3	0.8	0.9	2.5	0.8	0.8	1.3	1.0	1.0	0.49
YML013W	0.8	1.0	0.4	0.6	1.3	0.6	1.3	0.6	2.1	1.2	1.1	0.9	1.2	1.1	2.2	1.3	1.1	0.8	0.27
YML029W	0.6	1.5	1.3	1.0	1.2	1.6	1.1	0.9	2.3	1.8	1.2	1.1	2.0	1.6	0.8	1.1	1.2	1.0	0.46
YML041C	1.2	1.0	0.6	1.0	1.3	1.9	1.4	1.8	3.0	1.5	0.9	0.8	1.2	2.2	1.0	1.4	1.3	1.3	0.59
YML079W	1.0	1.7	1.1	1.5	0.8	1.4	1.2	1.2	1.9	1.4	1.2	1.1	1.6	1.4	0.3	2.0	1.4	1.4	1.18
YMR068W	0.9	0.7	0.8	1.5	1.6	1.1	1.5	0.8	2.4	1.4	1.1	0.7	1.4	1.1	2.2	0.8	1.3	1.1	0.24
YMR160W	0.8	1.3	1.2	1.2	1.4	2.2	1.0	0.9	2.2	1.8	1.0	1.0	1.6	1.1	1.5	1.4	0.9	1.3	0.37
YNL026W	0.7	1.0	1.3	0.8	1.4	1.1	1.5	1.0	2.7	1.8	1.1	0.9	1.7	0.8	0.8	1.5	1.0	1.4	0.86
YNL063W	0.9	1.9	0.9	1.4	1.1	1.1	1.4	1.5	3.0	1.8	1.1	1.0	1.5	1.1	0.7	1.8	0.9	1.0	0.54
YNL176C	1.1	1.3	2.9	1.0	0.8	0.7	0.7	0.9	2.4	2.1	1.2	0.6	0.6	0.9	0.8	1.3	0.6	0.8	0.66
YNL194C	1.6	0.7	2.0	15.2	0.7	0.7	1.5	0.9	2.2	6.4	17.1	0.5	1.5	3.0	0.5	4.3	0.8	2.4	0.34
YNL253W	1.3	1.3	0.6	1.0	1.5	1.3	1.3	1.1	2.8	2.6	0.8	0.8	1.1	1.4	0.5	1.1	1.1	1.2	0.54
YNL276C	1.3	13.1	1.9	0.3	1.1	1.3	0.9	0.7	3.1	1.3	0.7	0.9	1.5	1.5	0.5	0.8	1.1	0.8	0.22
YNR051C	0.7	0.5	1.1	0.6	1.3	1.8	1.3	0.7	2.4	1.4	1.5	0.9	2.1	1.0	1.2	0.6	0.7	0.8	1.58
YOR022C	1.3	1.1	1.1	1.2	1.4	1.2	1.6	1.2	2.0	1.4	1.7	0.8	1.7	1.0	0.8	1.8	1.1	1.1	0.36
YOR087W	0.7	1.0	1.8	1.3	0.8	0.3	0.9	0.8	2.8	1.3	1.3	0.8	1.2	0.9	0.8	1.2	0.8	1.1	0.61
YOR138C	0.8	1.5	0.7	0.8	0.8	1.0	1.1	0.8	2.1	3.7	0.7	0.9	1.8	0.9	1.0	1.1	1.1	1.1	0.47
YOR267C	0.8	0.7	1.0	0.9	1.2	1.6	0.9	0.7	2.4	2.2	0.4	0.9	1.4	0.9	1.3	0.8	1.3	1.0	0.58
YPL005W	1.0	1.0	1.0	1.0	1.4	0.8	2.0	1.0	2.6	2.8	1.1	0.7	1.2	1.0	1.2	1.6	1.2	1.1	0.32
YPL150W	0.7	0.9	1.6	0.9	1.0	0.6	1.2	1.1	3.1	2.0	1.1	1.0	2.1	1.0	1.1	1.2	1.4	1.1	0.47
YPL152W	1.4	1.1	1.4	1.8	1.4	1.2	1.3	1.1	3.6	2.7	1.4	0.9	1.4	1.2	2.3	1.4	1.2	1.9	0.42
YPL168W	1.1	1.5	0.5	1.4	1.0	0.8	1.2	1.2	2.1	1.6	0.7	0.7	1.0	1.0	0.8	1.3	1.1	1.2	0.41
YPL180W	0.9	2.0	0.7	0.6	1.2	1.5	1.0	1.0	1.9	1.8	1.0	0.8	1.5	1.0	0.7	1.0	1.0	0.9	0.30
YPL188W	1.3	1.2	2.9	1.0	0.9	0.6	1.3	1.6	2.5	2.6	1.0	0.6	0.9	1.4	0.8	1.7	0.7	0.9	0.55

YPR049C	1.0	2.5	1.5	1.0	0.7	1.2	1.1	1.1	2.4	2.1	0.9	0.9	1.6	1.4	1.5	1.7	1.0	1.1	0.34
YPR148C	1.1	1.2	0.8	1.3	0.9	1.0	1.6	1.5	2.7	1.7	0.9	1.2	1.2	1.1	1.7	1.7	0.9	2.0	1.25
YPR172W	1.1	1.6	2.2	1.2	1.0	1.7	1.2	1.0	2.1	1.3	1.9	0.8	1.3	1.6	1.5	1.9	1.1	1.4	0.45
YAL018C	2.0	1.9	1.1	11.3	0.8	0.7	1.0	1.6		0.4	0.1	0.9	1.3	1.0	6.9	1.1	0.9	0.9	0.21
YAR064W	2.1	0.9	0.9	2.8	0.8	0.5	1.1	1.1	0.0	0.7	0.7	0.8	1.1	1.1	1.9	1.0	0.9	0.9	0.30
YBR012C	2.5	1.7	1.3	0.8	0.9	1.8	1.5	1.1	1.4	2.6	0.7	1.0	2.1	0.9	1.1	1.3	1.4	1.2	0.46
YBR287W	1.7	1.9	3.1	2.4	1.3	1.4	1.1	1.0	1.2	1.6	2.0	1.2	3.4	0.8	1.3	1.6	3.2	1.9	2.73
YDR250C	1.9	1.4	0.9	3.0	1.0	0.4	1.0	1.1		0.5	0.6	0.8	1.2	0.9	0.7	1.7	0.9	0.9	0.32
YJL037W	1.8	1.4	1.4	2.4	1.5	1.8	1.2	1.2	1.8	2.4	1.6	0.8	1.1	2.0	1.6	1.0	1.3	0.9	0.26
YNL058C	2.0	1.0	2.1	1.7	1.0	0.4	0.7		0.3	0.7	1.0	1.0	0.6	0.8	2.2	0.9	0.8	1.0	0.60
YJR030C	0.7	4.4	0.9	1.2	0.7	0.6	0.7	0.9	0.4	0.5	0.8	0.9	0.7	1.0	0.8	0.9	0.7	0.9	0.27
YKR040C	1.2	3.7	2.4	2.9	0.9	0.9	0.9	1.0	1.3	1.2	0.8	0.8	0.6	3.8	1.1	1.2	0.7	0.8	0.53
YDR128W	0.6	3.9	1.4	0.9	0.8	0.9	0.8	1.1	0.9	1.5	0.3	0.6	1.1	1.0	1.4	1.3	0.9	0.9	0.40
YGR139W	1.3	3.7	0.8	0.7	1.3	0.6	0.8	0.6		0.6	0.9	0.5	0.4	0.9	2.3	0.8	1.0	0.8	0.22
YOR253W	0.9	2.8	1.0	1.4	0.8	0.5	1.3	1.2	0.4	1.0	0.9	0.7	0.5	1.3	1.1	0.9	0.9	0.9	1.01
YOL026C	1.2	2.7	0.7	1.4	1.9	1.0	1.8	1.1	1.2	1.1	1.2	0.9	1.2	1.3	0.9	2.4	2.1	1.4	0.65
YDR278C	1.0	3.2	0.9	1.0	1.1	1.0	0.7	0.5	0.6	0.7	0.4	0.6	0.7	0.9	0.7	0.5	0.7	0.8	0.78
YHR095W	1.1	2.6	1.5	2.1	1.1	1.0	0.8	1.0	1.5	1.2	1.3	0.6	0.7	0.9	0.8	0.9	0.8	0.7	0.67
YCL042W		2.5	7.2		1.1	0.6		0.6	0.7	2.2	3.2		7.5				0.8		1.94
YNL200C	1.0	3.0	3.6	2.0	1.0	0.4	1.2	0.7	1.9	1.2	3.1	0.9	1.1	0.6	0.8	0.9	1.2	0.9	1.40
YPL221W	0.9	3.0	1.0	1.8	1.4	1.1	1.3	0.9	0.3	1.3	1.0	0.8	1.0	0.8	1.0	1.2	1.5	1.2	1.51
YLR415C	1.1	2.4	6.7		0.9	0.3	1.2	0.9		0.3	0.8	0.8	1.0	0.8	1.0	1.9	0.8	1.0	0.19
YOR325W	1.0	2.6	1.5	0.3	0.9	0.3	1.2	0.9			0.6	0.9	0.6	1.3	0.7	1.4	0.8	1.0	0.19
YGL088W	0.9	2.1	0.9	1.1	0.6	0.8	1.0	0.5	0.5	0.8	0.8	0.6	0.7	1.4	0.4	0.3	0.5	0.7	1.80
YDR090C	0.9	3.0	0.8	1.2	1.8	1.4	1.5	0.8	1.0	1.5	0.7	0.6	0.8	0.9	1.1	0.9	1.1	1.1	0.79
YMR071C	1.0	2.0	1.1	1.9	1.4	1.2	1.8	1.1	1.6	1.8	1.2	0.7	1.3	1.2	0.8	1.4	1.2	1.9	2.39
YGR293C	0.5	1.9	1.6	0.0	1.1	1.1	1.3	1.3		1.1	0.6	1.0	0.7	1.0	0.7	0.9	0.8	0.9	0.23
YJL017W	1.1	1.7	3.5	1.1	1.3	1.2	0.2	1.0	0.8	1.4	1.4	1.3	1.5	1.0	1.1	0.6	1.0	1.0	0.85
YIL127C	1.1	4.8	0.2	1.2	1.0	0.4	0.6	1.2	0.3	0.5	0.9	0.7	0.4	1.3	0.7	0.2	0.7	0.6	1.57
YDR281C	2.1	2.6	0.4	2.1	1.3	1.5	0.6	1.2	0.2	0.5	0.8	0.9	0.7	1.2	0.3	0.6	1.5	1.2	1.56
YDR366C	0.9	2.0	0.8	0.9	1.0	1.5	1.5	1.1	1.0	1.5	1.7	0.6	0.8	1.4	1.4	1.0	1.2	0.9	1.14

YFR026C	0.9	2.0	1.0	0.8	1.0	1.2	1.3	1.3	0.6	0.8	0.6	1.1	1.0	2.3	2.2	1.1	1.1	0.39
YAR047C	1.1	1.7	1.1	0.7	1.5	1.3	1.2	0.8	0.5	1.1	0.9	1.4	1.3	0.5	1.0	1.7	1.0	0.35
YHL006C	0.7	1.4	1.1	0.6	0.9	1.1	1.2	1.1	0.9	0.7	1.0	1.1	1.1	0.6	0.9	1.1	1.0	0.37
YPL225W	1.3	1.7	1.1	1.6	1.0	1.8	1.7	1.7	1.0	0.9	0.7	0.8	1.4	0.9	1.8	1.0	1.7	2.87
YBR124W	0.9	1.4	1.0	0.4	1.5	0.6	1.1	1.2	1.1	0.7	0.4	0.9	1.0	1.0	0.8	0.9	0.9	0.29
YBL044W	0.9	2.7	1.2	0.8	2.1	0.7	1.1	0.7	0.2	0.5	0.6	0.7	0.9	0.7	0.6	0.8	0.8	0.39
YCL056C	1.3	1.4	1.5	1.0	0.7	1.4	1.6	1.0	1.5	1.6	1.5	1.3	2.2	1.7	2.3	1.2	1.5	0.82
YCR007C	2.2	1.6	1.5	2.9	0.9	1.4	2.0	1.0	1.4	2.6	1.1	1.5	1.7	0.8	1.7	2.6	2.1	0.39
YPR146C	0.8	1.6	1.2	0.9	1.3	1.1	1.0	0.8	0.9	1.2	1.4	1.3	0.9	0.9	1.3	1.0	1.1	0.80
YKL097C	0.9	1.6	1.8	1.4	0.6	0.7	0.8	0.4	0.1	0.6	0.6	0.9	1.0	0.8	0.5	1.1	0.5	0.21
YBR066C	1.9	1.3	1.3	1.6	1.6	1.3	1.3	1.2	0.3	0.9	1.2	0.6	1.1	0.4	3.2	1.2	1.2	0.83
YLR338W	1.1	1.6	0.9	1.1	1.4	1.1	0.9	0.8	7.9	0.5	0.9	1.2	0.8	1.5	0.9	0.8	0.6	0.33
YBR162C	0.6	0.5	1.3	0.8	3.1	0.6	0.3	0.8	0.1	0.4	0.8	0.7	0.5	1.9	0.4	1.2	1.3	3.96
YDL046W	1.2	1.4	0.9	1.3	5.1	1.8	1.2	0.7	1.6	2.3	2.6	1.0	1.5	2.3	2.6	1.2	1.6	1.94
YDR133C	0.9	1.1	1.2	2.0	2.9	0.7	0.2	0.5	0.1	0.4	1.3	0.3	0.1	0.6	1.1	0.6	0.9	4.02
YGR038W	0.9	1.2	1.3	0.8	3.5	1.3	1.1	0.7	1.4	1.0	1.4	1.0	1.2	1.1	1.3	1.1	1.1	1.27
YGR243W	1.4	2.2	1.0	5.0	9.4	1.5	1.9	1.3	0.7	3.0	1.7	1.2	1.1	0.8	2.8	2.1	4.4	1.11
YHR105W	0.9	0.8	1.5	6.3	2.4	0.9	0.9	1.0	1.1	3.4	0.7	0.7	1.4	0.9	1.8	1.0	0.9	0.32
YHR181W	0.9	0.7	1.0	1.4	2.4	0.9	0.8	0.9	0.5	1.3	1.3	0.8	0.7	1.6	1.5	0.9	0.9	1.40
YJL097W	1.0	1.1	0.9	1.6	3.7	1.6	1.0	0.8	0.3	0.7	1.5	1.0	0.7	1.0	1.2	1.2	1.1	1.69
YKL051W	1.0	1.1	0.8	0.8	4.7	0.8	0.6	0.8	1.3	1.1	1.8	0.8	1.2	0.7	0.9	1.5	1.4	1.07
YKL100C	0.7	1.1	0.6	1.6	5.0	1.8	1.2	0.7	1.3	1.3	1.6	0.9	1.3	1.0	1.7	0.7	1.5	1.14
YLR339C	0.7	0.8	1.3	0.8	3.1	0.4	0.4	0.5	0.4	0.4	1.6	0.6	0.1	0.5	0.5	0.7	0.6	1.37
YOL030W	1.0	0.8	0.9	1.0	4.4	0.9	1.3	0.6	1.2	0.6	1.3	0.9	1.7	0.6	0.7	0.9	1.0	1.93
YPR150W	1.3	1.1	1.3	3.0	4.3	0.9	0.9	0.8	1.2	3.3	0.9	0.6	1.4	0.9	1.8	0.9	1.0	0.31
YBL100C	0.8	1.8	0.6	0.5	1.6	0.4	1.1	0.6	0.2	0.8	0.9	0.7	0.9	0.9	0.5	0.8	0.8	0.58
YBR096W	1.1	1.5	0.9	1.6	2.8	1.7	1.9	1.0	1.2	1.6	1.2	0.9	1.9	1.7	1.1	1.1	1.5	1.43
YBR100W	1.0	1.5	0.9	1.1	4.8	0.5	1.0	0.9	8.5	3.0	0.2	0.7	1.2	1.2	1.2	0.8	0.9	0.35
YCL058C	1.1	1.6	1.7	1.2	2.2	1.1	0.8	0.9	0.6	1.0	1.0	1.0	0.9	1.9	0.8	1.4	0.9	0.72
YCR030C	1.1	0.9	1.0	1.0	3.3	1.2	1.0	0.7	0.9	2.0	1.1	0.9	1.7	0.8	1.0	1.2	1.0	0.63
YDL015C	0.9	0.7	1.2	1.1	3.6	2.5	1.1	0.9	0.7	1.1	0.8	1.0	0.9	1.1	2.1	1.0	1.5	2.99

YDL023C	0.8	1.6	2.4	1.1	0.6	0.3	1.5	0.7	0.7	1.5	3.5	0.9	1.4	0.7	0.6	0.9	0.8	1.1	0.78
YDL086W	0.9	1.2	1.9	0.9	1.3	0.9	0.8	0.8	1.3	1.1	1.4	0.8	1.7	0.9	0.9	1.1	0.8	0.8	0.80
YDR233C	1.1	1.1	3.2	1.9	0.7	0.8	1.2	1.1	0.2	0.7	3.7	1.3	0.5	0.9	1.5	2.8	0.9	0.9	3.47
YDR359C	0.8	0.7	1.7	1.9	1.3	0.8	1.0	0.8	0.7	1.0	0.5	1.0	1.1	1.3	1.4	0.9	0.8	0.9	0.34
YEL033W	0.9	1.2	2.7	1.1	1.0	0.7	0.3	0.7	0.6	0.4	1.2	0.6	0.4	1.0	0.6	0.9	0.9	0.9	2.96
YGR022C	1.3	1.1	1.7	2.2	1.1	1.3	0.9	0.9	0.2		0.4	0.7	1.2	1.1	0.7	0.6	0.9	0.8	0.50
YGR026W	0.8	1.1	2.9	0.9	0.9	1.5	0.9	0.9	0.8	0.7	1.3	0.5	0.6	1.0	1.2	1.4	1.0	1.2	2.19
YGR107W	1.0	0.8	1.7	0.9	1.1	0.8	1.0	0.9	0.1	0.0	0.6	0.6	0.9	1.0	1.1	0.8	1.2	0.8	0.43
YHL005C	0.9	2.7	2.7	0.2	1.2	1.1	0.8	0.9		0.9		0.7	0.7	1.0	0.7	0.7	1.0	0.8	0.33
YHR126C	1.1	0.9	2.8	0.6	1.0	1.2	1.1	0.6	0.4	0.7	1.9	1.0	0.8	0.8	1.4	1.7	1.1	1.3	1.31
YHR143W	0.5	0.9	4.9	1.0	1.2	2.1	0.5	1.5	0.2	0.7	1.2	0.5	0.5	0.8	0.3	0.9	0.9	0.7	3.58
YIL157C	1.1	1.3	2.1	1.7	0.8	1.3	1.2	1.0	0.9	0.9	1.3	0.8	1.0	1.0	0.5	1.8	1.1	1.5	1.46
YIR041W	1.6	1.0	2.4	1.4	1.3	1.0	1.6	0.9	1.5	2.5	1.2	1.3	1.1	1.1	1.3	1.3	1.1	0.9	0.66
YJL016W	1.3	1.6	2.7	1.3	1.4	1.5	1.4	0.9	0.6	0.9	1.3	0.9	1.3	1.6	1.1	2.5	1.2	1.5	0.88
YJR018W	0.8	1.2	1.8	0.7	1.1	1.0	0.9	0.7	0.4	0.7	0.9	0.8	1.5	0.9	1.4	0.8	1.0	0.7	0.35
YKL147C	1.0	1.3	1.9	0.9	0.8	0.7	0.8	0.7	1.0	0.5	0.3	0.9	1.0	1.0	0.7	1.1	0.9	0.9	0.28
YKL169C	1.0	1.0	1.6	1.8	0.8	1.2	1.5	1.2	0.3	0.5		0.7	1.0	1.3	0.8	2.6	0.9	1.1	0.45
YKR033C	0.9	1.2	2.1	1.0	1.0	0.6	1.0	1.0	0.1	1.4	0.3	0.4	0.9	0.9	1.1	0.6	1.0	0.9	0.28
YLL064C	0.8	1.7	1.7	1.9	0.9	1.7	1.1	0.9	1.1	2.5	1.0	1.1	1.3	1.1	1.2	1.6	1.2	1.0	0.68
YLR041W	0.8	1.2	2.2	1.5	1.6	0.5	1.2	0.6		0.4	1.1	0.4	0.3	0.5	1.3	0.5	0.7	0.9	0.69
YLR177W	0.8	1.2	1.8	2.2	0.8	1.1	1.3	0.9	1.0	2.3	0.9	1.1	1.5	1.0	0.5	1.3	1.1	1.5	1.25
YMR007W	1.1	0.9	2.0	0.7	1.3	1.7	3.1	0.7		0.1	0.9	0.8	1.3	1.2	1.8	1.1	2.5	1.0	0.30
YMR156C	1.0	0.9	2.7	1.7	1.2	1.4	1.4	0.9	0.6	1.3	1.1	0.7	1.0	1.2	0.7	1.3	1.2	1.1	0.40
YMR215W	0.8	0.5	2.1	1.2	1.1	0.3	0.3	0.5	0.1	0.2	1.1	0.4	0.2	0.5	0.7	0.2	0.7	0.7	1.59
YNL195C	0.9	1.1	3.5	4.7	0.9	0.8	1.1	0.9	2.6	11.7	2.9	0.6	1.6	1.5	1.4	6.4	0.8	0.9	0.32
YOL073C	0.7	0.9	2.5	0.6	1.1	1.2	1.3	0.7	1.9	1.1	1.7	0.8	1.6	0.8	1.6	1.7	1.2	1.2	0.54
YOR129C	0.6	0.8	3.3	0.8	1.3	0.4	0.4	0.6	0.2	0.4	1.1	0.6	0.2	0.5	0.6	0.3	0.6	0.4	5.22
YOR161C	0.6	1.0	6.0	2.2	1.1	0.9	1.2	0.8	1.0	1.7	4.6	0.5	0.7	0.9	1.4	2.0	0.7	1.2	0.82
YPL004C	0.7	1.2	3.7	1.9	1.4	1.3	2.3	0.9	1.1	1.6	1.7	0.9	1.3	1.0	1.1	2.0	1.2	2.2	4.52
YPL246C	0.7	0.8	2.6	0.9	1.4	1.3	0.8	0.6	0.4	0.5	1.1	0.8	0.9	0.7	1.2	1.1	1.2	0.9	0.98
YPL272C	1.1	0.9	2.2	0.6	1.3	1.1	0.7	0.8	1.2	2.5	1.1	0.7	1.1	1.1	0.6	2.5	0.9	1.2	0.25

YPR063C	1.0	0.8	2.6	0.8	1.2	1.0	0.6	0.7	0.5	0.6	1.0	0.7	0.8	1.0	1.0	1.2	1.0	0.9	1.41
YDL129W	1.0	0.7	1.0	2.3	1.3	0.9	0.9	1.0	0.5	0.9	0.6	0.9	0.5	0.8	0.5	1.4	0.6	0.8	0.69
YDR066C	1.3	1.5	0.9	2.2	1.0	1.4	1.1	1.3	1.5	1.1	0.6	0.8	1.4	1.3	0.9	1.4	1.1	1.1	0.57
YGL059W	1.3	1.5	0.9	3.1	0.7	0.7	1.0	1.4	1.6	1.7	1.4	1.0	2.0	1.2	1.6	1.7	1.4	1.4	0.49
YNL144C	1.8	0.8	1.2	4.5	0.9	1.1	1.1	1.1	0.7	1.9	1.7	1.4	1.0	1.1	0.1	1.7	2.4	2.8	0.51
YAL037W	1.6	0.9	1.1	3.5	1.2	1.1	1.0	1.3	0.6	1.9	0.5	0.8	1.1	1.2	0.8	0.6	0.9	0.9	0.55
YAR023C	1.1	1.0	1.7	2.1	1.3	1.0	1.1	0.8	0.9	1.4	1.0	1.2	1.1	1.0	3.1	1.6	0.9	1.1	0.62
YCR015C	1.1	0.9	0.5	2.1	1.7	1.0	1.5	1.2	0.5	1.0	1.1	0.9	0.6	1.2	0.9	1.1	1.1	1.2	0.58
YCR043C	1.4	0.5	0.8	2.3	0.9	0.8	0.7	1.2	0.3	0.7	1.0	0.6	0.8	1.6	1.2	0.8	1.0	1.1	1.25
YDL146W	1.0	1.2	1.2	2.0	0.7	0.7	1.4	0.9	0.8	2.3	1.4	1.0	1.4	1.0	1.7	1.8	1.0	1.2	0.62
YDR057W	0.9	1.4	1.6	2.6	0.8	0.7	1.4	1.2	1.5	1.1	1.0	0.7	0.9	1.2	1.1	1.7	0.7	1.1	0.70
YDR222W	1.0	1.1	1.7	1.7	1.4	1.3	0.5	1.0	0.6	1.0	1.0	0.5	0.8	1.3	0.5	0.6	0.7	0.8	0.52
YDR286C	1.6	0.9	1.1	2.1	1.0	1.7	1.3	1.9	0.8	1.2	1.1	0.9	1.4	1.3	0.8	2.1	1.1	1.4	0.90
YDR438W	1.2	1.8	0.8	2.1	1.6	1.3	1.4	1.0	1.1	0.8	1.1	0.8	1.2	1.3	1.0	1.2	1.6	1.2	0.48
YDR479C	1.1	1.8	1.0	2.3	0.9	1.6	1.2	0.9	1.2	1.6	1.0	1.0	1.2	1.4	1.6	2.1	1.1	1.5	0.51
YEL057C	1.1	0.6	1.3	2.4	1.0	0.9	1.1	1.2	1.2	1.9	0.7	0.8	1.5	1.5	1.0	1.8	0.9	1.0	0.44
YEL073C	1.6	0.8	1.0	2.8	1.2	1.5	0.8	0.9	0.7	1.2	1.1	0.5	1.0	1.1	2.8	1.0	1.3	0.8	0.38
YER084W	0.8	1.1	1.0	3.9	0.9	0.6	0.8	0.9	0.8	0.8	1.2	0.8	0.7	0.9	2.6	1.5	0.8	0.9	0.30
YER121W	1.1	1.2	0.7	7.7	1.3	2.5	1.3	1.3	0.6	0.5	1.2	0.7	0.6	1.3	0.9	4.6	1.2	1.8	0.73
YER189W	0.9	0.8	0.9	1.9	1.3	0.5	0.9	0.7	0.4	0.5	0.7	0.8	0.7	0.9	0.9	0.8	0.8	0.8	0.43
YFL017C	1.3	1.2	0.9	2.3	1.5	1.3	1.5	1.4	0.8	0.6	1.1	1.0	0.7	1.1	0.6	1.8	1.5	1.8	1.21
YFL046W	1.3	0.9	0.7	2.1	1.7	0.7	1.3	1.3	0.7	0.7	1.3	0.8	0.7	1.3	1.0	1.1	1.4	1.6	0.68
YFR008W	1.1	1.0	0.8	2.2	1.1	1.0	1.1	0.9	1.5	1.4	0.7	0.9	0.8	1.1	0.8	1.5	1.0	1.0	1.26
YGL214W	0.9	1.0	1.2	2.6	1.2	0.9	0.8	0.9	0.4	0.7	0.4	0.8	0.6	1.1	0.9	0.8	1.0	0.8	0.61
YGL218W	1.4	0.9	1.4	3.4	1.2	1.1	0.8	1.1	1.3	0.4	0.1	0.8	1.3	0.9	1.1	0.7	1.0	1.0	0.53
YGR021W	0.9	1.5	1.0	8.6	1.0	0.9	1.3	1.4	0.7	0.6	0.6	0.9	0.9	1.2	0.8	2.1	1.0	1.0	0.58
YGR024C	1.2	0.9	0.7	2.6	1.0	0.7	1.3	1.4	0.4	1.2	1.0	0.7	0.5	1.4	1.0	1.2	0.8	1.3	1.61
YGR064W	1.1	1.2	1.6	2.3	0.7	0.6	1.1	1.0	0.1	0.8	1.7	0.8	0.9	2.1	1.0	1.3	0.8	0.9	0.50
YGR182C	1.6	1.2	1.2	2.3	1.1	0.9	0.7	1.1	0.5	0.7	0.9	0.7	0.7	2.2	0.4	2.0	1.0	1.7	1.95
YGR236C	1.6	1.6	0.4	4.1	1.2	1.2	1.0	1.2	1.5	0.7	1.0	0.9	1.2	1.2	0.7	7.9	1.5	1.9	0.30
YHL042W	1.2	0.8	1.3	51.1	1.0	0.7	1.2	1.0	0.8	1.8	0.7	0.6	1.3	1.2	1.1	1.9	1.1	0.9	0.37

YIL012W	1.2	5.8	1.5	2.8	1.5	1.5	0.9	1.7	2.8	0.9	0.6	0.4	1.1	1.1	0.9	1.0	0.9	0.28
YIL028W	1.0	1.1	0.8	5.4	1.4	0.7	1.1	0.8	1.7	1.1	0.5	1.0	1.1	0.9	1.1	1.3	1.0	0.27
YIL057C	1.3	1.8	1.1	4.6	1.3	1.2	1.2	1.4	0.1	0.8	0.6	0.9	1.5	0.8	11.1	1.1	3.6	0.26
YIL089W	1.3	1.3	0.7	3.9	1.6	1.6	1.6	1.1	0.6	0.7	0.6	0.7	1.4	0.6	1.3	1.4	1.3	0.31
YIL102C	1.4	1.6	1.0	6.1	1.5	0.8	1.1	0.7	0.3	0.6	0.6	0.7	1.0	0.8	0.6	1.2	1.0	0.18
YIL113W	0.9	1.0	0.9	2.6	0.6	1.0	1.9	0.7	1.9	2.2	0.8	1.3	1.2	0.9	1.6	1.4	1.3	0.48
YIL122W	1.2	1.1	1.1	2.1	0.9	0.2	0.8	0.7	0.4	0.8	1.0	0.7	1.0	1.6	1.4	0.9	0.9	0.35
YIL100W	1.4	2.0	0.9	2.3	1.3	1.1	1.2	1.2	1.8	2.7	0.9	1.4	1.2	1.2	1.4	1.5	1.1	0.38
YIL169W	0.8	1.1	1.5	2.8	1.4	0.8	0.9	0.7	0.3	0.5	0.5	0.7	1.0	0.9	0.6	1.1	0.9	0.35
YIL199C	1.1	0.7	0.9	4.5	1.0	1.7	1.0	1.0	1.0	1.6	0.8	0.9	1.9	0.9	3.7	1.0	1.0	0.59
YJR039W	0.9	0.6	0.8	3.0	1.8	1.0	1.6	1.2	1.8	1.6	0.7	1.5	0.6	1.2	1.5	1.3	1.3	0.24
YJR101W	0.8	0.6	0.7	2.9	1.8	0.9	1.5	1.1	0.4	0.8	0.5	0.5	0.9	0.5	1.2	1.0	1.1	2.04
YKL061W	1.3	0.7	0.7	1.8	0.8	1.0	0.9	1.2	0.8	1.0	0.7	0.8	1.2	0.6	1.5	1.3	1.6	0.92
YKL121W	0.9	7.8	0.8	11.8	1.6	1.2	1.7	1.0	0.8	0.9	0.8	1.0	1.2	0.8	1.6	1.6	1.1	0.31
YKL160W	1.5	1.0	0.4	1.8	1.1	1.5	1.5	2.1	1.3	1.9	0.9	1.6	1.5	0.8	1.6	1.5	2.2	2.19
YLR016C	0.7	1.3	0.5	2.0	1.5	0.8	1.1	1.2	0.8	1.1	0.7	0.8	0.9	0.7	1.3	1.0	1.3	1.15
YLR030W	1.4	1.5	0.8	2.5	1.2	1.5	1.5	0.9	0.3	2.7	0.2	1.5	1.2	0.6	2.1	1.0	1.0	0.29
YLR036C	1.3	0.8	0.7	2.0	1.5	1.3	1.7	1.2	0.4	1.6	0.8	0.7	1.3	0.6	1.4	1.0	1.4	1.07
YLR112W	1.1	0.9	1.1	1.7	1.3	1.3	1.0	0.7	0.7	0.7	0.5	0.7	0.8	0.4	0.4	1.0	0.8	0.39
YLR125W	1.4	2.0	0.5	3.1	1.8	0.7	1.3	1.2	0.5	1.7	1.1	0.8	1.3	0.7	1.6	1.2	1.2	0.29
YLR128W	1.3	1.4	0.8	1.8	2.0	1.3	1.3	1.1	0.8	1.7	1.4	1.2	1.4	0.9	1.5	1.2	1.2	0.25
YLR204W	1.1	0.9	0.5	2.1	2.0	1.5	2.0	1.3	1.4	1.6	1.6	1.1	1.8	1.0	2.5	1.2	1.3	1.26
YLR211C	1.3	1.0	0.8	7.7	1.7	1.2	1.8	1.1	0.9	1.2	0.8	1.1	1.2	3.6	1.9	1.3	1.3	0.35
YLR257W	1.5	1.0	0.7	2.4	1.4	1.2	0.8	1.3	1.0	1.1	1.2	1.0	0.9	1.0	1.7	1.8	2.6	5.20
YLR326W	1.2	1.0	1.5	2.2	1.3	0.4	1.2	0.9	0.7	1.5	6.6	0.5	1.1	0.7	0.9	0.8	1.0	0.33
YLR334C	1.2	1.1	1.1	2.3	1.8	1.0	1.4	0.9	1.0	0.8	0.8	0.9	2.2	2.5	0.7	0.8	1.0	0.30
YLR408C	1.3	2.3	0.6	2.3	1.4	1.0	1.0	1.4	0.9	1.1	0.7	1.1	2.1	0.9	1.1	1.2	1.2	0.79
YLR414C	1.5	1.6	1.4	4.8	1.3	0.6	0.7	0.9	0.2	1.2	1.2	1.0	1.0	2.1	0.9	3.9	3.6	2.21
YLR444C	0.9	0.8	1.7	5.9	0.7	0.7	0.9	0.9	0.2	0.2	1.1	0.6	1.1	1.3	0.7	0.9	0.9	0.50
YML050W	1.5	1.2	1.3	2.1	0.8	0.5	0.9	1.1	1.3	1.6	1.2	0.8	1.9	1.0	1.5	0.8	1.1	0.42
YML107C	1.1	0.7	0.4	1.8	2.2	1.1	1.5	1.3	0.6	0.9	0.7	0.6	1.3	1.0	1.3	1.2	1.5	0.67

YMR031C	0.7	0.8	1.2	2.1	0.6	0.7	0.8	0.9	1.5	1.1	0.8	0.7	1.0	1.0	0.7	1.6	0.9	1.3	1.26
YMR204C	1.1	1.9	1.3	2.3	1.0	0.6	0.7	1.0	1.0	2.2	0.7	0.7	1.1	1.2	1.5	1.1	0.9	1.1	0.31
YMR206W	1.4	1.4	2.3	3.9	1.1	1.0	1.3	0.9	1.0	9.0	1.8	1.0	1.2	1.4	0.3	2.2	1.0	1.2	0.17
YNL010W	1.5	1.0	0.7	1.9	1.0	1.2	1.1	1.8	0.5	0.6	1.1	0.9	0.7	1.2	0.9	1.2	1.0	1.7	4.53
YNL127W	1.1	1.2	0.7	3.6	0.7	1.2	0.8	1.0	2.7	2.2	1.0	1.0	1.7	1.0	1.5	1.4	0.9	1.4	0.36
YNL217W	1.1	1.2	0.5	1.7	2.1	1.5	1.3	1.4	0.3	0.9	0.7	1.0	1.0	0.9	0.5	1.0	1.3	2.1	2.35
YOL118C	2.6	2.2	1.3	2.2	1.5	1.5	3.2	1.1	3.2	3.2	1.4	0.6	1.7	3.0	1.0	0.5	0.9	1.0	0.24
YOR053W	1.0	1.1	0.5	1.7	1.7	0.9	1.6	0.9	1.3	0.8	1.3	0.6	0.9	1.2	1.0	1.3	1.2	1.2	0.77
YOR352W	1.3	0.9	1.0	2.2	1.6	0.9	1.8	1.1	1.7	2.0	1.1	1.0	1.2	1.3	0.7	2.5	1.3	1.7	0.59
YOR394W	1.2	0.8	2.2	1.6	1.6	1.7	1.8	1.0	1.1	2.3	1.9	0.9	1.3	0.9	0.9	1.7	1.6	1.1	0.51
YPL033C	0.8	1.0	0.9	5.1	1.3	0.7	1.0	0.7	0.4	1.6	0.7	0.6	0.7	1.1	0.8	0.4	0.9	0.8	0.23
YPL066W	0.9	1.0	1.1	2.0	1.3	1.3	1.3	0.9	0.5	0.8	1.0	1.1	0.9	0.7	0.7	1.2	1.3	1.3	0.77
YPR014C	1.0	0.7	1.1	7.9	0.8	0.9	0.8	0.9	0.9	0.9	0.5	0.7	0.7	1.0	0.9	0.8	0.9	1.1	0.29
YBR005W	1.9	2.6	1.1	2.9	0.8	0.7	1.2	0.9	0.4	1.3	0.8	1.7	1.9	0.9	1.1	1.7	2.9	4.6	1.00
YFL027C	0.8	0.8	1.1	1.3	1.1	0.3	0.4	1.1	1.8	1.3	1.3	0.6	1.1	0.3	1.4	1.2	5.1	5.2	1.74
YGL080W	1.3	1.5	1.1	1.3	1.5	1.4	1.5	1.2	1.1	1.2	0.8	1.0	0.7	1.6	0.9	1.7	1.3	2.9	1.70
YMR252C	1.1	1.0	1.5	1.3	1.3	1.0	1.3	1.1	0.9	1.0	1.4	0.8	1.1	1.1	1.1	2.1	1.5	2.2	0.86
YOR385W	2.8	1.2	0.2	2.5	1.5	1.0	1.2	1.0	1.5	2.2	1.2	0.6	2.8	0.8	0.8	1.2	4.6	5.9	1.17
YAR033W	1.0	0.8	1.5	1.1	1.1	1.4	2.1	1.2	1.3	1.6	1.5	0.9	1.5	1.3	0.9	2.0	1.1	3.0	1.15
YBR151W	0.8	0.8	1.3	1.2	1.2	1.7	1.3	0.8	0.8	0.9	0.9	0.9	1.1	0.8	1.0	3.0	1.4	2.4	1.83
YHR162W	1.2	1.2	0.9	1.8	1.2	1.3	1.7	1.4	1.0	1.7	1.3	1.2	1.5	2.0	1.1	1.4	1.3	2.7	3.64
YLR165C	1.4	0.8	1.3	1.1	1.1	1.5	1.4	1.1	1.7	1.0	1.4	0.9	1.2	1.4	0.5	1.6	1.1	2.1	0.78
YNL157W	1.4	1.1	0.7	1.5	1.9	0.9	1.3	1.1	1.7	1.4	1.3	0.9	1.6	1.5	1.0	1.0	1.9	2.3	1.41
YOL002C	0.9	0.7	0.5	1.0	2.0	0.9	0.4	0.8	0.1	0.3	0.8	1.1	0.2	0.5	0.6	1.7	1.5	2.1	5.33
YPL233W	1.2	0.9	0.5	1.1	1.4	0.6	1.0	1.0	0.3	0.6	0.9	0.6	1.0	1.0	0.4	1.0	1.9	1.9	0.48
YGR149W	1.4	1.3	1.8	1.9	1.0	1.7	1.8	0.8	0.6	0.6	1.8	1.2	2.6	1.0	2.4	1.3	2.0	1.7	0.71
YNL043C	1.0	4.4	1.6	1.3	0.8	0.6	0.9	0.9	0.4	0.4	0.7	0.9	2.1	1.2	1.6	0.8	2.7	1.6	0.68
YPL067C	1.2	1.6	2.8	1.4	1.0	0.8	1.2	1.2	0.8	0.8	0.9	1.4	0.9	0.7	1.5	1.1	2.9	1.7	0.40
YPL170W	1.2	1.3	0.9	1.1	1.9	1.1	0.6	1.1	1.4	1.0	1.1	0.9	1.1	1.4	1.2	1.6	2.2	1.4	1.05
YGL051W	1.1	1.0	1.6	1.7	1.3	1.0	1.3	0.8	1.1	1.8	1.4	1.0	1.5	1.2	0.8	2.6	1.4	1.9	1.06
YIL112W	1.1	1.4	2.8	1.9	0.6	1.3	1.1	0.9	1.3	2.0	1.4	1.2	1.1	1.3	1.8	2.4	1.2	1.3	0.45

YLR052W	1.0	1.5	0.8	1.3	1.0	0.8	1.0	1.1	1.1	1.0	0.8	1.2	1.0	2.4	0.7	0.9	0.77
YNL203C	0.9	1.3	0.3	3.2	1.0	1.7	1.6	0.8	0.3	1.1	0.9	1.2	2.7	5.6	1.3	1.7	0.21
YNR014W	1.0	0.8	1.7	1.2	1.2	0.7	1.7	0.9	0.3	4.4	0.9	1.5	4.9	2.4	1.1	1.0	0.31
YAL028W	0.9	0.7	1.1	2.0	1.0	0.6	1.2	0.8	1.6	1.3	1.0	1.5	1.6	1.7	1.0	1.0	0.30
YBL095W	0.8	1.4	1.2	1.4	1.1	0.9	1.1	0.9	1.0	0.6	1.2	1.0	1.0	2.2	1.3	1.9	0.72
YBR157C	0.7	1.0	0.4	1.4	1.3	1.2	1.6	0.7	0.6	0.3	0.6	0.5	0.9	1.9	1.3	0.8	0.69
YDL091C	1.1	1.3	1.8	1.4	0.7	0.8	1.3	1.3	1.6	1.5	1.5	1.3	1.5	2.4	1.1	1.6	0.47
YDL216C	1.1	1.1	0.7	2.0	1.6	1.6	1.2	1.6	1.3	1.3	0.7	1.2	1.1	1.8	1.0	1.6	0.42
YDR067C	1.3	1.2	0.7	2.7	0.9	1.1	1.3	1.8	1.0	1.3	0.9	1.2	1.5	2.4	1.3	1.4	0.76
YDR186C	0.7	0.9	0.7	0.7	1.3	0.7	1.4	1.2	1.2	1.6	0.7	1.1	0.8	2.3	1.1	0.9	0.50
YDR196C	0.9	0.9	0.7	1.1	1.0	1.7	1.7	1.5	1.6	1.1	1.3	1.2	1.0	2.7	1.2	1.9	1.54
YDR262W	1.3	1.8	0.8	1.2	1.7	1.3	1.7	1.2	0.9	1.7	1.6	0.9	1.7	3.8	1.0	1.4	1.11
YDR306C	0.9	1.2	0.7	1.8	1.7	1.2	1.6	1.3	2.0	1.4	2.1	1.2	1.1	2.4	1.0	1.5	0.77
YDR319C	1.3	0.9	0.8	1.1	1.2	1.2	1.7	1.3	1.1	1.1	1.3	1.3	1.3	2.0	2.1	2.2	1.23
YER188W	1.3	0.9	1.2	1.9	0.9	1.5	1.2	0.7	0.4	0.9	1.2	1.1	1.1	2.5	1.0	1.1	0.61
YGL004C	0.8	1.4	1.3	1.0	1.0	1.4	2.9	1.4	1.8	2.2	1.0	1.3	0.9	2.2	1.1	1.4	0.48
YGR141W	0.8	1.6	1.6	1.7	1.1	1.5	1.5	0.9	0.3	1.0	0.6	1.0	0.7	2.1	1.1	1.3	0.65
YHR080C	0.6	1.8	1.9	0.7	0.8	1.8	1.1	1.1	1.9	1.2	0.7	2.0	0.9	2.3	1.1	1.3	0.49
YHR097C	1.6	0.7	0.7	0.9		0.8	0.8	0.7	0.4	0.6	0.7	1.3	0.9	2.0	1.7	1.4	0.24
YIL077C	0.9	0.8	1.2	1.2	1.3	1.8	1.2	0.9	1.5	1.4	1.3	1.3	1.3	2.4	1.3	1.1	0.75
YJL046W	0.9	0.9	0.6	1.8	1.0	0.7	1.5	1.1	1.8	2.7	4.2	1.3	1.3	2.5	1.0	1.3	0.68
YLL005C	1.0	1.1	1.1	1.2	1.6	1.9	1.3	1.0	0.4	1.0	0.9	1.1	1.7	2.1	1.1	1.2	0.44
YLR151C	1.4	2.0	1.4	1.0	1.0		1.4	1.4	1.5	0.9	1.1	0.7	1.3	2.4	1.0	1.4	0.30
YLR271W	1.6	1.2	0.8	1.8	1.4	1.4	1.7	1.5	1.0	1.0	1.3	1.2	1.2	3.0	1.5	1.8	0.78
YMR025W	1.2	1.2	0.7	1.5	1.3	1.3	1.4	1.2	1.0	1.6	1.2	1.2	1.8	2.4	1.0	1.5	0.42
YMR135C	1.0	1.0	1.1	1.9	1.8	1.0	1.0	1.0	1.1	1.4	1.1	1.3	1.0	2.3	1.5	1.3	1.06
YMR210W	1.0	1.1	1.8	1.9	0.6	0.8	1.1	1.1	1.5	2.2	0.8	1.0	1.0	2.2	0.8	1.5	0.56
YNR040W	0.8	4.9	0.5	0.9	0.9	1.6	2.1	1.3	1.1	0.8	1.2	0.8	1.5	2.1	1.1	1.0	0.30
YPL039W	1.2	0.9	0.6	1.3	1.4	1.5	1.5	1.4	1.1	1.0	0.9	1.1	1.1	2.4	1.1	1.1	0.52
YPL099C	1.1	1.9	0.7	2.0	0.9	1.2	1.4	1.4	2.4	1.7	0.8	1.1	1.3	2.1	1.0	1.7	0.92
YPL107W	1.2	0.8	1.1	1.3	1.0	1.1	1.2	1.5	1.4	1.3	1.1	0.8	1.7	1.8	1.0	1.1	0.59

YPL138C 1.1 1.7 1.1 1.8 0.7 0.5 1.1 1.3 1.1 1.5 0.5 0.9 0.6 1.3 2.7 2.6 0.8 1.1 0.38

表2 ミトコンドリアタンパク質遺伝子
化学物質存在下の発現mRNA／不存在下の発現mRNA

酵母遺伝子	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	強度
YJR048W	1.3	0.9	2.2	1.4	0.8	0.5	0.3	0.9	0.5	1.5	1.0	0.8	0.4	2.5	0.6	1.5	1.2	1.2	1.19
YOR226C	1.3	2.2	1.7	1.1	1.3	1.2	1.2	1.2	1.3	5.9	1.5	0.6	0.9	2.7	1.0	0.7	1.0	0.7	0.58
YDL174C	0.9	1.8	0.9	1.3	0.5	1.7	3.6	0.8	0.5	1.7	0.9	2.8	5.9	1.1	0.6	5.1	2.2	4.0	0.63
YBL022C	0.4	0.8	1.2	0.7	1.2	1.2	1.0	0.4	2.8	1.2	1.1	0.9	2.6	1.0	1.5	1.0	0.9	0.7	0.76
YCL057W	0.6	1.5	2.3	0.5	1.1	1.8	1.4	1.8	4.2	2.1	1.6	1.0	3.8	1.0	2.8	1.5	0.9	1.1	0.76
YDR258C	1.6	2.3	2.8	1.4	1.3	2.4	3.9	1.9	4.9	13.3	1.7	1.8	5.2	1.5	0.6	1.0	1.3	1.3	0.87
YGR028W	1.4	3.5	1.0	1.8	0.9	1.5	2.1	1.4	1.7	2.0	1.1	1.5	2.6	1.2	1.0	2.2	1.5	2.6	0.91
YGR244C	1.0	1.2	1.6	1.6	0.8	2.6	3.9	1.8	1.4	1.1	1.8	1.9	2.6	1.2	2.0	2.6	1.9	3.1	1.12
YKL142W	1.8	2.7	3.1	1.4	0.7	3.4	6.9	2.3	5.8	5.9	2.0	1.9	3.3	2.3	1.3	3.3	2.4	3.6	1.68
YNL055C	1.1	1.8	5.5	2.0	0.9	2.6	1.2	0.7	1.1	1.0	1.9	1.7	2.4	0.9	1.1	2.6	1.2	1.7	4.10
YNL071W	0.9	0.9	1.7	1.5	0.6	1.3	1.4	0.9	1.1	1.2	1.6	1.3	2.5	0.8	1.1	1.1	1.0	1.2	1.61
YOR020C	1.4	2.1	1.7	1.7	1.5	2.3	1.7	1.7	5.8	2.6	2.5	0.8	3.0	1.6	1.5	1.4	1.4	1.7	1.66
YOR037W	1.0	1.5	0.6	1.4	1.5	1.6	2.5	1.5	1.3	1.0	1.2	1.2	2.1	1.0	0.9	1.4	1.2	1.6	0.61
YDL198C	1.4	1.0	2.1	1.4	0.7	0.8	1.0	1.1	1.9	2.7	2.5	1.2	2.0	1.7	1.2	1.4	1.5	1.1	1.19
YDR231C	1.1	1.6	1.0	1.5	1.1	2.2	1.7	1.3	1.5	1.4	1.3	1.1	2.4	1.5	1.0	3.0	1.2	1.3	0.92
YER178W	0.8	0.9	3.6	1.0	0.7	2.5	1.6	0.8	1.7	1.3	2.5	1.3	2.4	0.9	1.8	1.0	1.1	0.9	2.18
YFL016C	0.8	1.0	1.6	0.9	1.3	1.3	1.4	0.7	6.4	2.9	1.2	1.0	2.8	0.8	0.8	0.6	1.2	0.9	1.25
YGR008C	2.1	3.0	1.7	3.2	0.9	2.9	3.7	1.9	3.1	2.4	2.6	2.0	3.4	1.3	1.5	2.3	1.7	4.2	3.03
YIL155C	1.0	0.7	1.4	3.7	1.3	1.4	2.2	1.0	2.5	2.9	1.3	1.4	2.0	1.3	1.4	3.8	1.1	1.4	0.51
YJL102W	1.1	0.7	0.4	0.8	1.3	1.6	0.6	0.9	3.1	2.2	0.7	0.8	2.6	1.5	1.5	0.6	1.0	1.1	0.22
YJR045C	0.5	1.9	3.9		0.5	1.2	1.0	0.8	3.2	3.0	1.4	1.0	2.3	0.5	2.3	0.8	0.7	0.9	3.78
YLR259C	0.7	1.0	3.1	1.6	1.1	0.9	1.8	0.8	1.8	2.6	3.0	0.7	2.5	0.8	2.1	1.3	0.8	1.0	2.09
YLR348C	1.1	4.5	1.2	1.2	0.9	1.9	0.9	0.9	2.1	1.3	1.3	0.9	1.9	1.0	2.4	1.1	1.1	1.0	0.64
YML054C	1.5	1.8	1.3	3.4	1.3	1.8	1.2	1.5	4.1	1.8	1.4	1.8	2.8	2.1	1.1	7.8	1.1	1.6	0.25
YMR089C	0.8	1.1	0.9	0.9	0.8	1.2	1.2	1.3	5.6	2.5	1.3	0.8	2.3	0.9	1.8	1.1	0.9	1.1	0.69
YMR152W	0.9	1.1	1.8	0.9	0.8	7.5	0.8	0.8	2.7	1.3	1.2	1.3	1.9	1.1	0.6	1.0	1.5	0.9	0.71
YNL104C	1.1	1.3	3.0	0.9	0.8	0.8	0.6	0.9	1.1	2.0	2.1	1.1	2.1	0.9	2.5	1.5	0.9	0.9	1.69
YOR130C	0.8	1.7	1.4	1.0	1.8	1.6	1.3	0.8	2.0	1.7	0.6	0.9	2.1	1.3	1.0	0.8	1.5	1.1	0.51

YPR024W	0.7	1.0	1.3	1.0	1.4	0.7	3.0	1.7	0.9	0.8	2.5	0.7	1.0	1.6	1.1	0.8	0.84
YPR067W	1.6	1.2	1.7	0.9	1.3	1.5	3.5	3.4	1.8	1.0	3.0	1.6	1.3	0.8	1.0	1.0	0.66
YBR029C	0.7	0.2	1.8	1.0	0.4	0.7	2.0	1.1	0.7	1.3	1.7	0.9	3.5	0.9	0.6	0.8	1.56
YCL009C	0.6	0.9	2.0	0.5	0.7	1.3	0.9	1.6	1.5	1.7	1.6	0.7	6.5	0.9	1.1	0.8	0.68
YER026C	0.8	0.6	3.3	1.0	1.2	2.5	0.9	1.5	0.9	1.7	1.9	1.1	4.0	1.4	1.7	3.2	4.48
YLR109W	0.8	2.9	6.0	0.9	1.3	2.1	2.4	2.7	1.5	1.6	3.2	2.3	3.9	1.8	1.1	1.2	3.86
YMR189W	0.7	0.8	1.9	2.8	0.4	1.9	0.7	0.9	8.2	0.6	0.9	1.6	5.6	0.9	1.0	0.8	0.88
YNL169C	0.7	1.4	1.4	1.2	0.7	1.4	1.1	1.1	0.8	1.0	1.7	0.9	3.4	0.8	1.1	1.3	1.05
YER069W	1.3	0.8	3.3	1.4	1.5	1.3	0.8	10.4	1.5	0.8	1.4	1.3	2.4	1.1	1.1	0.9	0.25
YIL022W	0.8	0.7	1.1	1.6	0.8	1.2	1.1	1.3	1.0	0.9	1.2	0.6	2.9	1.1	0.8	0.7	0.52
YBR146W	0.9	0.8	0.7	1.5	1.3	2.6	0.9	1.1	1.2	1.0	1.7	1.2	1.0	2.9	1.0	1.2	1.61
YDR019C	1.4	0.5	1.7	4.0	0.9	4.8	0.4	0.7	1.8	0.7	1.0	1.6	1.8	1.8	1.2	1.6	2.48
YGR207C	1.5	1.1	1.0	1.1	1.5	2.8	2.1	2.6	1.4	1.1	1.0	2.2	0.6	1.8	1.2	1.8	1.49
YMR072W	1.1	1.0	1.4	1.0	1.7	2.4	3.0	1.2	1.9	0.8	2.1	1.2	0.8	1.7	0.9	1.9	2.06
YNL037C	1.4	1.8	1.7	1.1	1.7	2.8	0.6	3.2	1.4	1.3	1.9	1.3	0.9	1.4	0.9	1.3	2.05
YOR136W	1.0	0.9	3.5	1.0	1.5	3.9	0.3	3.4	1.4	1.2	1.5	0.9	1.2	1.3	0.8	1.3	3.20
YPL271W	1.2	3.2	4.1	1.2	1.4	3.3	0.6	1.2	1.7	0.8	1.2	1.3	0.8	1.4	1.2	1.3	1.34
YAL044C	1.5	1.1	1.0	3.0	0.8	2.2	0.4	0.6	1.4	0.6	1.1	1.4	0.7	1.0	1.4	1.8	4.07
YAL054C	1.2	1.1	1.4	1.6	1.1	2.2	1.1	1.1	1.3	1.0	1.8	1.3	0.9	2.5	1.5	1.4	0.24
YBR024W	1.0	1.0	1.1	2.4	1.0	2.2	1.3	1.4	1.3	1.1	1.7	1.9	0.8	2.3	1.0	1.2	1.14
YDR405W	0.9	1.1	4.7	1.0	1.1	2.4	0.6	1.0	1.0	1.2	1.3	1.1	2.5	1.3	1.3	0.9	0.44
YGL068W	1.0	0.6	1.1	1.4	0.9	2.6	0.7	0.8	1.0	1.1	1.0	0.9	0.6	1.8	1.8	1.0	3.35
YGR220C	1.1	0.6	0.9	1.1	1.3	2.1	0.8	1.5	1.1	0.9	1.1	1.5	1.1	2.3	0.9	1.1	1.42
YHR037W	0.7	0.9	1.3	1.6	0.9	1.8	0.9	2.2	1.7	1.1	1.1	1.1	1.1	2.0	1.0	1.4	1.15
YIL070C	1.2	1.0	0.8	1.4	1.3	2.3	0.3	0.6	1.0	0.8	0.7	1.3	1.0	2.4	0.7	1.1	1.69
YIL111W	1.6	1.0	1.8	2.7		2.6	1.6	1.1	2.1	0.9	1.7	1.5	1.1	2.5	1.9	3.9	1.52
YKL138C	1.2	0.9	0.6	0.9	1.3	2.3	1.1	2.1	1.2	0.8	0.8	1.6	0.6	2.5	1.0	1.3	1.29
YKL150W	1.1	2.0	3.0	1.4	1.4	2.3	1.1	1.3	1.9	1.2	1.8	1.4	0.9	6.1	1.2	2.7	2.20
YKR006C	1.0	0.7	1.2	1.2	1.4	2.4	1.0	1.5	1.2	0.8	0.9	1.6	0.9	2.3	0.8	1.1	1.39
YLR142W	4.4	2.7	1.1	6.1	1.3	3.1	3.1	4.4	3.8	0.8	1.2	2.1	1.6	3.4	1.9	3.2	0.28
YML110C	1.1	0.8	1.9	1.6	0.8	2.6	2.7	2.2	1.7	1.1	1.8	1.4	1.3	2.3	1.1	1.6	2.01

YNL284C	1.1	0.7	0.3	1.4	1.8	1.0	2.8	1.6	0.9	1.9	1.3	0.7	1.0	1.5	0.8	2.4	1.0	1.5	1.26
YDR288W	0.8	1.5	0.4	1.2	2.2	1.0	2.4	1.0	1.0	2.0	1.1	0.7	1.0	1.4	1.0	1.6	1.1	1.2	0.47
YMR193W	1.4	1.2	0.5	1.9	2.2	1.7	2.7	1.7	0.8	1.1	1.6	0.6	0.9	1.5	0.8	3.7	1.1	1.7	0.93
YOR374W	1.3	4.5	7.3	3.9	0.9	1.4	1.9	0.9	2.3	5.9	2.6	1.5	1.7	1.1	2.5	2.5	1.2	2.4	1.24
YER061C	0.9	0.9	1.2	2.5	0.8	0.4	0.9	0.7	0.3	0.7	2.2	0.7	0.9	1.0	0.8	1.8	1.2	1.2	0.84
YIL136W	1.1	1.0	1.2	2.5	1.0	1.0	1.8	1.1	3.4	1.7	4.8	0.9	1.7	1.7	1.5	4.5	1.3	3.2	0.95
YLL009C	1.0	1.2	0.6	1.9	1.5	1.2	1.7	1.0	1.3	1.7	3.5	0.7	0.9	1.4	1.1	2.8	0.9	1.2	1.66
YLR163C	1.0	0.9	0.7	1.4	1.6	1.3	1.7	1.4	2.6	2.9	2.2	0.7	1.4	1.3	1.2	1.4	0.9	1.1	0.55
YBR291C	2.0	0.9	1.0	1.5	0.9	1.1	0.9	2.2	0.9	1.0	1.1	0.9	1.0	1.7	0.5	1.5	0.9	1.3	1.19
YIL094C	1.5	0.4	0.8	0.7	1.4	1.2	1.3	3.6	0.3	0.4	1.8	1.0	0.7	1.0	0.5	0.9	0.9	1.0	2.26
YAL015C	1.2	1.1	1.7	1.9	1.1	0.7	1.2	1.1	4.0	2.7	1.4	1.0	1.2	1.6	0.7	2.0	1.1	1.2	0.61
YJR095W	1.2	20.5	1.9	6.7	1.2	1.5	2.0	0.9	0.5	6.3	0.6	0.7	0.8	1.3	0.8	0.8	1.3	0.9	0.23
YKL085W	1.4	2.3	1.6	1.2	1.2	1.9	1.5	1.2	1.9	3.0	1.8	0.8	1.5	1.0	0.5	1.7	0.9	1.3	2.16
YMR177W	1.4	0.8	1.1	1.0	1.6	0.8	1.0	1.2	2.4	3.8	1.4	0.6	0.5	1.2	0.8	0.5	0.9	0.9	0.55
YPL224C	1.0	2.2	1.3	2.5	0.6	1.3	2.2	1.3	3.2	4.2	0.8	1.1	1.3	1.4	1.0	2.5	1.3	1.9	0.64
YER014W	1.0	0.9	0.9	0.6	0.8	4.0		1.2	3.5	1.1	0.9	1.1	1.5	1.2	2.3	0.8	1.0	0.9	0.43
YFR049W	1.5	1.5	1.8	1.2	1.3			1.3	2.6	1.5	1.7	1.2	1.4	1.2	0.7	0.9	1.3	1.0	0.83
YGR112W	1.0	2.9	1.1	1.3	0.9	1.1	1.3	1.3	2.6	1.3	1.3	0.7	1.1	1.1	1.2	2.8	0.9	1.2	0.31
YLL001W	0.9	0.7	1.2	1.2	0.6	1.0	0.8	1.0	3.5	2.4	0.9	0.7	1.7	1.2	0.9	1.3	0.9	1.3	0.70
YML042W	0.9	1.4	1.5	2.2	1.0	0.9	0.8	1.6	3.8	2.4	2.5	1.0	1.2	1.4	1.7	4.8	1.0	0.9	0.29
YNL213C	1.7	11.6	0.9	1.5	1.3	1.2	1.4	1.8	3.0	1.5	1.5	0.8	0.9	1.8	1.0	1.7	0.9	1.2	0.70
YOR386W	1.0	0.8	1.3	1.5	1.2	3.3	1.8	1.0	4.1	3.0	1.4	1.2	2.4	0.9	1.3	1.2	2.1	1.7	0.46
YBR037C	0.8	0.8	1.3	2.4	0.7	1.2	1.2	1.0	3.0	1.9	1.5	0.7	1.2	1.2	1.0	2.7	1.6	1.3	0.60
YCR024C	1.1	1.0	1.5	0.8	0.8	2.9	1.0	1.2	2.5	1.7	1.4	0.8	0.9	1.3	1.0	1.2	0.9	1.0	0.32
YDR194C	0.7	0.9	0.5	1.0	1.0	1.0	1.3	1.4	2.8	2.2	1.2	0.6	1.2	0.8	1.1	0.8	0.6	0.8	2.19
YER017C	0.8	1.1	1.4	1.3	1.0	0.5	1.1	0.5	2.7	1.8	0.9	1.0	1.5	1.1	2.1	1.0	0.9	1.0	0.43
YGL125W	1.0	3.2	4.3	0.7	0.9		1.7	0.8	2.1	2.1	1.6	1.0	1.4	1.0	1.9	1.2	1.2	1.1	0.27
YGR029W	1.1	1.4	1.0	1.0	0.8	0.6	1.6	1.7	2.7	1.1	1.2	0.6	1.0	2.0	0.4	1.1	1.1	1.3	0.71
YHL038C	1.0	1.2	1.4	0.8	1.3	0.8	1.2	1.1	4.0	1.7	0.8	1.6	1.3	0.6	0.8	0.5	0.9	0.6	1.95
YKL192C	1.1	1.0	3.7	1.1	1.1	1.8	1.1	0.9	3.5	1.6	1.1	1.2	1.7	1.5	1.2	2.1	1.0	0.8	1.57
YKR052C	0.9	1.1	2.6	2.6	1.0	0.5	1.9	1.1	1.9	3.6	1.3	0.9	1.2	1.1	0.5	2.5	0.8	1.5	1.15

YML078W	1.2	1.9	2.5	1.5	0.7	1.4	1.3	1.4	2.6	2.2	2.4	1.2	1.7	1.7	1.0	1.8	1.3	1.6	1.98
YMR056C	1.1	1.3	1.7	1.0	1.1	0.9	1.4	1.2	1.8	1.1	1.6	0.9	0.9	1.1	0.7	2.4	1.0	1.1	0.72
YNL005C	1.1	1.0	0.6	1.2	1.2	1.7	1.3	1.5	2.0	2.0	1.2	0.9	1.5	1.3	1.0	1.6	0.9	1.5	1.52
YPR047W	1.0	1.0	0.9	1.5	0.9	1.0	1.8	1.2	2.1	1.9	1.1	0.9	1.3	1.0	0.8	2.8	1.0	1.5	0.39
YPR134W	1.1	1.1	0.8	1.7	1.5	0.6	1.5	1.4	1.8	2.3	1.3	0.9	1.1	1.5	0.7	2.4	1.0	1.2	0.65
YGL191W	1.7	1.6	1.4	1.8	0.9	1.6	1.0	1.6	1.1	1.3	1.6	0.9	1.1	1.6	0.7	1.8	1.2	1.7	2.35
YLR038C	2.3	1.1	0.6	2.1	1.8	1.2	1.0	1.4	0.4	0.9	1.4	0.6	0.5	1.6	0.7	2.1	1.2	2.1	1.52
YHR008C	1.3	5.4	4.8	1.8	0.6	1.0	0.7	0.9	1.7	2.4	2.1	0.7	1.2	1.6	1.7	2.2	0.9	1.0	1.04
YPR037C	1.2	2.3	1.6	1.3	0.8	0.9	1.2	1.1	1.5	1.3	0.9	0.9	1.0	1.6	4.1	1.8	1.2	1.7	0.80
YAL039C	1.1	2.2	1.7	1.0	1.1	0.8	1.0	1.2	1.6	2.2	1.1	1.4	1.6	1.2	3.3	2.2	1.4	1.1	0.39
YDL181W	1.3	1.8	1.9	1.8	1.7	1.2	1.1	0.6	0.7	0.8	0.8	0.9	0.9	1.1	0.4	1.1	1.5	1.4	0.85
YPL215W	1.1	1.9	1.0	1.5	0.8	0.7	0.7	1.1	1.7	1.2	1.1	0.7	0.7	1.2	0.6	1.4	1.0	1.1	1.10
YPL262W	1.0	1.7	3.8	1.2	0.6	1.6	1.3	1.0	1.4	5.8	1.4	1.1	1.5	1.2	0.6	1.4	1.1	1.2	0.79
YNL256W	0.7	1.6	0.6	0.6	1.0	0.5	0.6	0.9	0.8	0.6	0.6	0.6	1.3	0.7	0.9	0.4	0.6	0.6	1.09
YBL030C	1.0	0.9	4.5	0.9	0.7	1.1	0.9	0.8	0.4	0.9	1.1	0.9	0.5	0.8	1.8	1.0	1.0	1.1	3.12
YBR221C	0.8	0.7	3.2	1.5	1.3	1.7	1.5	0.8	1.0	1.3	1.2	1.3	1.7	0.8	1.1	1.5	0.9	1.0	3.62
YKL141W	1.6	1.1	4.7	1.7	1.5	1.2	0.5	0.8	0.8	0.5	1.2	0.8	0.8	1.4	0.6	2.8	0.9	1.8	2.84
YKR066C	0.9	1.4	5.5	0.7	1.0	0.9	0.5	0.7	0.7	2.4	1.3	0.9	0.6	1.5	0.6	1.3	0.9	1.1	1.25
YMR083W	1.4	1.7	2.6	1.1	1.5	1.8	1.7	1.1	0.4	1.1	1.6	0.7	0.9	0.8	1.3	1.3	0.9	1.1	2.52
YMR203W	0.8	0.7	3.0	1.4	0.6	1.1	0.8	0.7	0.7	1.2	2.3	0.7	1.1	0.7	1.2	0.9	0.8	0.7	1.62
YBL099W	0.8	0.9	3.1	1.4	1.0	0.9	0.9	0.8	0.9	0.7	2.1	1.0	0.9	0.6	1.0	0.9	0.7	1.2	3.49
YDR178W	2.0	2.0	3.4	2.2	0.9	2.1	0.6	0.9	0.9	0.8	2.0	1.3	1.5	1.5	0.7	3.0	1.2	2.3	2.27
YDR298C	1.3	1.2	2.6	1.3	1.3	1.2	1.0	1.2	1.0	1.6	1.2	1.1	1.2	1.5	0.8	2.0	1.1	1.6	2.69
YEL024W	1.3	0.9	3.8	1.1	1.3	1.1	0.7	1.0	0.7	0.6	0.9	0.8	0.6	1.1	0.6	2.1	1.1	1.5	1.59
YGR082W	1.0	0.9	2.2	1.0	0.9	1.1	0.9	0.8	0.6	0.9	1.3	0.8	0.5	0.9	1.2	1.3	0.9	0.8	1.47
YJL133W	1.0	1.0	2.0	0.9	0.9	0.5	0.5	0.9	0.6	1.4	1.2	0.8	0.8	0.7	0.9	0.6	0.8	0.7	0.91
YJR077C	1.1	1.1	2.0	1.6	0.9	0.9	0.7	0.8	0.4	0.7	1.6	1.0	0.9	0.7	1.5	0.7	1.0	0.8	1.79
YJR121W	0.9	1.1	3.3	1.0	0.8	1.5	1.0	0.7	0.8	1.3	0.9	0.8	1.0	0.7	0.9	1.2	1.1	1.4	3.99
YKL148C	0.9	0.8	3.7	0.7	0.8	0.5	0.6	0.8	1.7	1.7	1.5	0.8	0.8	0.8	0.6	1.1	0.8	1.0	0.54
YLL041C	1.1	0.5	4.6	1.0	1.6	1.2	0.3	0.8	0.7	0.8	1.3	0.8	1.0	1.2	0.4	3.1	1.1	1.7	1.75
YLR304C	0.7	0.6	5.0	0.7	0.6	1.9	0.6	0.6	0.1	2.2	1.6	1.0	0.5	0.7	1.6	1.8	0.5	0.7	2.39

YOR142W	1.0	1.2	3.4	1.0	1.4	1.6	1.0	0.8	1.1	1.5	1.5	0.8	1.4	0.8	1.1	0.8	0.9	1.0	1.31
YOR176W	0.7	2.6	2.7	0.9	1.0	0.9	0.5	1.0	1.0	0.5	1.4	1.3	1.5	0.8	0.8	1.4	1.2	2.1	1.23
YPL135W	0.9	1.2	2.5	1.2	1.6	1.3	1.2	1.0	0.5	2.8	1.3	1.1	1.2	1.1	1.5	1.2	1.5	1.7	1.50
YDR529C	1.8	1.0	0.9	3.2	1.2	0.8	0.5	1.3	0.5	0.6	0.8	0.6	0.7	1.5	0.5	1.8	1.0	2.3	3.11
YGL018C	1.1	1.0	1.8	3.0	1.1	0.4	1.1	0.8	0.5	1.4	1.1	1.0	1.3	1.2	1.1	1.5	0.8	1.0	0.36
YBR003W	0.9	0.8	1.0	1.9	0.7	1.2	1.1	0.9	1.0	1.3	1.3	0.8	1.2	0.8	0.7	2.0	1.1	1.3	1.06
YBR044C	0.8	1.4	0.7	1.9	1.4	1.0	1.5	1.1	0.8	1.2	1.1	0.8	1.2	0.9	0.9	1.4	0.9	1.3	0.57
YBR091C	1.1	1.0	0.6	3.0	1.1	0.7	1.0	1.5	0.7	1.6	0.7	0.8	1.2	1.7	0.9	0.9	1.0	1.0	0.87
YBR185C	1.2	1.0	1.3	2.0	0.8	1.2	1.2	1.1	0.9	1.6	1.2	0.7	1.0	1.7	1.0	1.7	0.8	1.3	0.89
YBR282W	1.0	1.0	0.5	2.3	1.0	1.4	1.2	1.4	1.0	0.9	0.9	0.8	1.3	1.4	1.1	1.5	0.9	1.2	1.36
YDR347W	1.1	0.8	0.9	3.5	0.8	1.2	1.2	1.2	0.8	1.6	0.8	0.8	1.3	1.5	1.0	1.7	0.9	1.2	1.33
YEL039C	1.1	0.7	1.3	5.1	0.9	1.5	0.6	1.1	1.2	1.2	1.7	0.6	0.5	1.4	0.4	3.5	0.7	1.1	1.59
YGR076C	1.3	1.6	0.6	2.3	0.9	1.2	1.7	1.9	1.2	1.8	1.7	1.0	1.4	2.3	0.5	2.3	0.9	1.5	0.97
YGR174C	1.1	1.6	0.6	2.4	1.0	1.4	1.0	1.6	1.8	0.7	1.3	0.9	1.5	1.6	0.7	3.2	1.3	2.3	1.05
YKL003C	1.1	0.7	0.8	1.8	1.0	1.0	1.4	1.2	1.5	2.2	1.7	0.7	1.3	2.0	1.0	2.3	1.0	1.2	0.90
YKL016C	1.5	1.3	0.7	1.7	1.5	0.8	1.5	1.6	1.3	1.8	1.3	1.0	1.3	1.6	0.7	1.8	1.0	1.7	2.08
YKL170W	1.0	0.8	0.5	1.9	1.3	1.5	1.5	1.2	0.9	1.1	0.7	0.8	0.9	1.3	0.8	2.1	1.1	1.4	1.27
YKL194C	0.9	0.7	0.8	1.6	1.8	1.4	2.1	1.1	1.3	1.4	1.6	0.6	1.1	1.4	0.8	1.2	1.1	1.1	0.52
YLR395C	1.8	1.3	2.2	1.9	0.7	0.4		1.0	1.0	0.9	1.5	0.6	0.5	1.7	0.4	1.2	1.2	2.3	1.76
YML120C	1.1	1.2	1.9	1.9	0.6	0.6	0.8	0.9	1.3	1.5	1.3	0.9	1.2	0.8	0.5	1.5	1.0	1.6	0.74
YOR100C	1.3	1.4	1.6	1.7	1.0	1.2	1.6	1.0	2.0	2.6	1.4	0.8	1.0	1.4	4.3	2.8	0.9	0.8	0.32
YOR150W	1.7	1.2	1.0	1.9	0.8	0.9	1.2	1.1	0.8	1.8	1.0	0.8	1.0	1.6	0.8	1.6	0.9	1.3	1.11
YOR187W	1.0	0.5	1.9	2.0	0.6	1.7	1.5	0.7	0.6	0.8	1.4	0.8	0.7	0.6	1.3	1.6	0.8	1.3	3.12
YJL166W	2.1	1.5	1.6	1.3	1.6	0.7	0.8	1.4	1.3	1.2	1.4	0.7	0.8	1.9	0.5	2.3	1.7	4.0	2.31
YMR035W	1.2	1.7	1.5	1.7	0.8	1.5	2.3	1.4	1.7	1.6	1.5	0.5	1.4	1.3	1.1	1.5	2.2	2.4	0.96
YBL038W	1.0	0.9	0.5	1.8	0.9	0.7	8.0	1.6	1.4	1.5	0.7	0.7	1.0	2.3	0.7	1.8	1.2	1.9	1.56
YDR377W	1.3	1.1	1.3	1.4	1.9	1.3	1.1	1.3	1.0	0.9	1.4	0.9	0.7	1.4	0.6	1.8	1.2	2.5	3.00
YGL187C	1.5	0.8	1.6	1.8	1.3	1.1	0.6	0.7	0.6	0.6	0.7	0.8	0.7	0.9	0.3	1.4	0.9	2.4	2.73
YCR046C	1.0	1.2	1.2	1.6	1.0	0.8	1.2	0.9	1.9	1.4	1.5	1.1	1.5	1.3	1.4	2.8	1.3	1.0	0.63
YML129C	1.1	0.9	0.9	1.2	1.7	1.7	1.8	1.2	1.4	2.2	1.2	0.8	1.0	1.4	1.1	2.9	1.3	1.3	1.04
YOL096C	1.1	1.0	1.2	1.6	1.2	1.3	1.7	1.0	1.3	1.4	1.2	1.2	1.4	1.4	1.0	2.3	1.2	1.2	0.64

YBR122C	0.9	0.9	0.3	1.1	1.5	1.1	1.1	1.4	1.2	0.7	0.8	1.2	0.7	1.9	0.9	1.5	1.53
YBR251W	1.0	0.9	1.0	1.2	1.3	2.0	2.0	1.1	1.5	1.1	1.0	1.6	0.8	3.0	0.9	1.4	1.13
YCR083W	1.1	2.8	1.5	1.8	1.6	2.4	2.4	1.8	1.8	1.1	1.8	2.4	1.0	3.1	1.3	1.3	0.98
YDL067C	1.8	1.0	1.6	1.3	2.0	0.9	0.8	0.9	1.4	1.0	0.6	1.4	0.7	1.8	1.2	1.7	1.85
YDR079W	1.3	1.1	0.8	1.1	1.2	1.7	1.3	0.8	1.3	1.1	1.3	1.5	0.6	2.6	1.1	1.3	1.06
YGR062C	0.9	1.0	0.7	1.4	0.7	0.9	1.3	1.4	1.6	1.0	1.5	1.2	0.5	1.8	0.9	1.1	0.54
YJL096W	1.0	1.0	0.8	1.3	1.9	1.0	1.7	1.4	1.2	1.0	0.7	2.1	1.0	2.2	1.1	1.2	1.21
YJL180C	0.9	1.6	1.1	1.3	1.5	1.3	1.6	1.4	1.4	0.8	1.2	1.4	0.6	2.0	0.9	1.4	1.08
YLR295C	1.4	1.1	1.1	1.7	2.2	1.1	1.1	1.2	1.3	0.5	0.8	1.2	0.5	2.4	0.9	1.5	1.07
YMR023C	1.4	1.3	0.5	1.9	1.7	1.1	1.9	1.4	0.8	0.7	1.1	1.6	0.7	2.1	1.1	1.4	0.48
YMR267W	0.8	1.8	0.7	0.9	1.0	1.4	1.2	1.5	1.0	0.8	0.7	1.0	0.9	2.6	0.9	1.3	0.94
YNL073W	0.8	1.4	0.9	1.7	0.6	0.5	1.1	1.0	1.1	0.7	1.2	0.7	0.7	1.8	0.8	1.0	0.52
YOR316C	0.7	2.5	1.5	1.5	1.0	0.9	1.4	0.8	2.4	1.1	1.6	1.0	1.5	2.2	0.8	1.0	0.93
YPL040C	1.1	1.0	0.8	1.7	0.8	1.1	0.8	1.1	0.9	0.9	1.0	1.1	1.1	2.7	0.8	1.1	0.33
YPL134C	1.5	1.0	1.6	1.6	1.4	1.2	1.2	0.8	1.7	0.8	1.0	1.4	1.1	3.3	1.3	1.3	0.70

酵母遺伝子
表3 遺伝子修復系タンパク質遺伝子
化学物質存在下の発現mRNA／不存在下の発現mRNA

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	強度
YFL014W	3.4	5.1	5.7	11.0	1.0	9.3	5.5	3.4	13.1	5.8	5.0	4.3	15.2	7.3	6.3	14.2	1.5	8.8	2.14
YGL163C	0.9	0.8	0.6	4.3	1.5	0.9	1.0	1.4	5.8	2.3	0.4	0.9	3.1	1.6	1.8	1.0	0.9	0.8	0.26
YKL145W	0.8	1.4	1.2	1.0	1.4	2.1	1.6	1.5	3.5	2.7	1.8	1.3	2.7	1.0	1.3	1.2	1.1	1.5	2.29
YIL153W	0.8	1.4	1.3	2.9	1.0	0.9	1.6	0.5	4.3	1.1	1.0	1.0	1.2	1.0	2.8	1.3	0.9	0.7	0.32
YIR002C	0.8	1.1	0.5	0.6	1.2	2.2	1.3	1.2	1.7	1.4	0.8	1.3	1.2	1.1	1.1	1.4	1.1	1.2	0.58
YAL015C	1.2	1.1	1.7	1.9	1.1	0.7	1.2	1.1	4.0	2.7	1.4	1.0	1.2	1.6	0.7	2.0	1.1	1.2	0.61
YBR073W	0.7	1.0	0.9	0.7	1.2	0.7	0.6	1.1	2.5	1.8	0.5	0.9	1.4	1.0	1.3	0.8	0.7	0.8	0.63
YDL200C	1.4	2.0	1.2	1.8	1.1	0.6	1.7	1.5	2.4	1.8	1.2	1.1	1.1	1.8	0.7	1.8	0.9	1.6	0.79
YGL058W	1.1	1.1	0.6	0.7	1.0	1.0	0.0	1.3	3.7	1.8	0.8	1.3	1.0	1.3	1.3	0.6	1.1	0.7	1.07
YIL143C	0.9	0.8	1.1	0.9	0.8	1.4	0.8	0.9	7.1	3.5	1.5	0.9	1.7	1.0	1.3	1.1	0.9	0.9	0.56
YML032C	0.8	0.9	1.1	0.7	1.0	0.9	0.8	0.9	3.0	1.1	1.0	0.9	1.8	1.0	1.7	1.2	1.0	1.0	0.66
YNL250W	0.9	2.2	0.8	1.2	0.8	0.8	1.2	1.3	4.2	2.3	1.0	1.4	1.3	1.6	1.3	1.4	1.0	1.0	0.31
YOR386W	1.0	0.8	1.3	1.5	1.2	3.3	1.8	1.0	4.1	3.0	1.4	1.2	2.4	0.9	1.3	1.2	2.1	1.7	0.46
YBL019W	0.9	9.1	0.7	1.2	1.0	1.0	1.2	1.2	2.6	1.4	1.0	0.8	0.9	1.1	0.6	1.9	0.8	1.1	0.38
YDR369C	1.1	1.1	2.4	1.1	1.0	0.6	0.4	1.0	2.4	1.8	1.1	0.9	0.1	0.7	1.2	0.6	0.8	0.7	1.88
YEL037C	0.9	2.0	0.9	1.0	0.5	0.6	0.8	0.8	2.6	1.2	1.0	1.1	2.0	1.0	1.6	0.5	1.0	0.8	0.82
YER162C	1.0	1.2	1.0	1.1	0.9	0.7	0.5	0.9	2.8	1.6	0.5	0.4	0.8	0.8	1.0	1.0	1.2	0.9	0.45
YGR258C	0.7	0.9	0.7	0.7	1.5	2.2	1.5	0.8	2.5	1.5	0.3	0.9	1.9	1.2	1.1	1.2	1.0	0.9	0.37
YJR052W	1.1	1.0	1.1	1.0	1.0	1.4	1.2	1.7	4.5	2.3	1.1	1.1	1.8	1.4	1.4	1.4	1.0	1.3	0.36
YOR005C	1.2	1.8	1.0	0.8	1.3	1.3	1.4	1.3	2.4	1.5	1.2	0.9	2.1	1.2	0.8	1.4	1.1	1.0	0.29
YPL022W	0.7	0.8	0.7	1.2	0.8	5.2	0.8	1.0	2.1	1.6	0.8	0.7	1.4	0.9	0.9	1.0	0.9	0.9	0.72
YPL164C	1.1	0.7	1.1	1.0	1.2	1.7	0.9	1.0	2.1	2.0	1.1	0.9	1.0	0.9	1.3	1.4	1.0	1.0	0.25
YPL194W	0.9	1.4	0.4	1.1	1.3	1.1	1.5	1.3	9.6	3.1	0.9	0.9	1.4	1.1	1.4	0.9	1.0	0.8	0.22
YPR025C	1.1	0.8	0.6	0.6	1.6	0.9	1.4	1.3	1.9	1.7	0.9	0.7	1.1	1.3	1.1	1.3	1.1	1.5	0.87
YGR180C	3.1	1.1	1.9	1.0	2.0	0.6	0.5	1.0	1.4	1.5	1.0	0.9	0.9	0.9	1.3	1.2	1.0	1.9	3.90
YEL019C	1.1	1.6	0.3	0.7	0.9	1.5	1.2	0.9	0.7	0.7	1.2	1.0	1.0	1.7	1.5	0.3	0.8	0.9	0.27
YLR288C	1.2	0.8	1.6	1.8	1.7	1.2	1.3	1.5	0.8	1.3	1.4	0.6	0.7	1.2	0.9	1.5	1.2	1.3	0.31
YMR284W	1.1	1.0	0.5	2.0	0.8	0.8	0.8	1.1	1.6	1.8	1.1	0.6	1.0	1.2	0.7	1.3	1.1	1.3	0.54

YMR035W	1.2	1.7	1.5	1.7	0.8	1.5	2.3	1.4	1.7	1.6	1.5	0.5	1.4	1.3	1.1	1.5	2.2	2.4	0.96
YOL043C	1.1	0.9	0.8	1.7	1.2	0.8	1.0	0.9	1.0	1.8	1.2	0.8	0.9	1.5	0.6	2.5	1.0	1.0	0.38
YGR231C	1.0	1.2	0.7	1.0	1.3	1.9	2.1	1.1	3.2	2.3	1.6	1.3	3.9	2.2	1.3	2.5	1.0	1.5	1.74
YHR164C	0.9	1.3	0.9	0.7	0.9	1.4	0.8	1.1	1.3	3.1	0.6	1.2	2.0	1.3	2.2	1.1	0.8	1.0	0.44
YJR046W	1.0	1.2	1.2	1.5	0.8	2.0	0.9	0.9	6.0	2.4	0.6	0.9	3.0	1.0	1.1	0.8	0.7	0.7	0.45
YLR103C	0.8	1.5	1.1	0.4	1.0	1.1	1.3	1.4	0.8	0.5	0.9	1.6	3.0	1.0	0.8	1.5	1.1	1.4	1.32
YMR072W	1.1	1.0	1.4	1.0	1.7	1.6	1.4	1.0	3.0	1.2	1.9	0.8	2.1	1.2	0.8	1.7	0.9	1.9	2.06
YDR054C	1.3	1.0	0.7	1.4	0.7	1.9	1.1	1.5	2.9	3.2	1.9	1.0	2.5	1.1	1.6	1.4	0.8	1.4	1.18
YAR007C	0.7	1.9	0.8	0.5	1.5	1.6	0.8	1.1	4.1	1.7	0.9	0.9	1.7	1.4	1.2	0.9	0.8	1.0	1.03
YGL058W	1.1	1.1	0.6	0.7	1.0	1.5	0.0	1.3	3.7	1.8	0.8	1.3	1.0	1.3	1.3	0.6	1.1	0.7	1.07
YIL036W	0.9	1.3	1.3	1.8	0.9	1.8	1.4	1.1	3.6	2.7	1.2	1.2	1.9	1.1	0.8	1.3	1.1	1.3	0.66
YNL213C	1.7	11.6	0.9	1.5	1.3	1.7	1.4	1.8	3.0	1.5	1.5	0.8	0.9	1.8	1.0	1.7	0.9	1.2	0.70
YNL312W	0.9	1.0	1.6	0.7	1.4	1.7	0.5	1.2	3.7	2.5	1.4	0.9	0.7	1.1	0.8	0.8	1.2	1.1	2.05
YNL261W	1.0	1.3	0.6	1.3	0.7	1.3	1.0	1.1	2.3	1.5	0.8	0.8	0.8	1.4	0.7	1.1	0.8	1.0	0.91
YGR180C	3.1	1.1	1.9	1.0	2.0	1.0	0.5	1.0	1.4	1.5	1.0	0.9	0.9	0.9	1.3	1.2	1.0	1.9	3.90
YJL026W	2.5	2.4	2.9	1.0	1.7	1.0	0.5	1.2	1.0	1.1	1.3	1.0	1.2	1.0	1.1	1.6	1.4	2.1	3.74
YDL017W	0.8	2.3	1.2	1.3	1.2	1.1	1.1	1.2	0.8	1.8	0.8	0.8	0.9	1.3	1.3	1.0	0.8	1.0	0.38
YML058W	1.9	1.2	5.8	1.9	0.6	1.3	0.6	0.7	1.1	1.2	3.3	0.9	1.4	1.1	2.5	1.3	1.3	1.5	2.14
YLR233C	1.1	0.9	2.0	2.0	1.2	0.8	0.8	1.1	0.6	0.5	0.8	0.9	1.0	1.1	1.1	1.1	1.0	1.2	0.43
YMR284W	1.1	1.0	0.5	2.0	0.8	1.2	0.8	1.1	1.6	1.8	1.1	0.6	1.0	1.2	0.7	1.3	1.1	1.3	0.54
YGL163C	0.9	0.8	0.6	4.3	1.5	0.9	1.0	1.4	5.8	2.3	0.4	0.9	3.1	1.6	1.8	1.0	0.9	0.8	0.26
YGL127C	1.0	1.9	1.3	1.7	1.3	0.6	1.0	0.9	1.2	1.5	1.0	1.4	1.7	1.0	1.5	1.3	1.0	1.2	0.54
YMR072W	1.1	1.0	1.4	1.0	1.7	2.4	1.4	1.0	3.0	1.2	1.9	0.8	2.1	1.2	0.8	1.7	0.9	1.9	2.06
YGL249W	1.4	0.8	0.5	0.8	1.1	2.5	1.2	0.9	0.3	2.4	0.6	0.8	0.8	1.9	0.7	1.4	1.0	1.0	0.20
YBR272C	0.8	1.8	1.3	1.0	1.1		1.9	1.1	1.7	2.7	1.1	0.5	1.3	1.0	0.5	1.7	1.1	1.2	0.52
YDL059C	2.6	5.1	1.4	1.7	1.2	1.2	1.1	1.2	10.5	7.8	2.0	1.3	1.7	4.7	0.7	1.5	0.8	0.9	0.63
YAR007C	0.7	1.9	0.8	0.5	1.5	0.6	0.8	1.1	4.1	1.7	0.9	0.9	1.7	1.4	1.2	0.9	0.8	1.0	1.03
YBR073W	0.7	1.0	0.9	0.7	1.2	0.7	0.6	1.1	2.5	1.8	0.5	0.9	1.4	1.0	1.3	0.8	0.7	0.8	0.63
YML032C	0.8	0.9	1.1	0.7	1.0	0.9	0.8	0.9	3.0	1.1	1.0	0.9	1.8	1.0	1.7	1.2	1.0	1.0	0.66
YNL250W	0.9	2.2	0.8	1.2	0.8	0.8	1.2	1.3	4.2	2.3	1.0	1.4	1.3	1.6	1.3	1.4	1.0	1.0	0.31
YCR014C	0.8	1.0	0.8	0.6	1.2	1.1	1.1	1.0	2.4	1.0	0.8	0.7	1.2	1.0	0.7	1.5	1.0	0.9	0.34

YDR369C	1.1	1.1	2.4	1.1	1.0	0.4	1.0	2.4	1.8	1.1	0.9	0.1	0.7	1.2	0.6	0.8	0.7	1.88
YIL072W	0.8	3.1	1.1	2.6	1.5	1.2	1.4	2.9	2.1	1.8	1.1	1.4	2.0	1.4	1.4	1.0	1.1	0.23
YOR005C	1.2	1.8	1.0	0.8	1.3	1.3	1.3	2.4	1.5	1.2	0.9	2.1	1.2	0.8	1.4	1.1	1.0	0.29
YPL164C	1.1	0.7	1.1	1.0	1.2	1.7	1.0	2.1	2.0	1.1	0.9	1.0	0.9	1.3	1.4	1.0	1.0	0.25
YPL194W	0.9	1.4	0.4	1.1	1.3	1.1	1.3	9.6	3.1	0.9	0.9	1.4	1.1	1.4	0.9	1.0	0.8	0.22
YGR180C	3.1	1.1	1.9	1.0	2.0	0.6	1.0	1.4	1.5	1.0	0.9	0.9	0.9	1.3	1.2	1.0	1.9	3.90
YEL019C	1.1	1.6	0.3	0.7	0.9	1.5	0.9	0.7	0.7	1.2	1.0	1.0	1.7	1.5	0.3	0.8	0.9	0.27
YML058W	1.9	1.2	5.8	1.9	0.6	0.6	0.7	1.1	1.2	3.3	0.9	1.4	1.1	2.5	1.3	1.3	1.5	2.14
YLR288C	1.2	0.8	1.6	1.8	1.7	1.2	1.5	0.8	1.3	1.4	0.6	0.7	1.2	0.9	1.5	1.2	1.3	0.31
YMR284W	1.1	1.0	0.5	2.0	0.8	0.8	1.1	1.6	1.8	1.1	0.6	1.0	1.2	0.7	1.3	1.1	1.3	0.54
YMR096W	1.7	1.7	1.1	0.8	1.0	2.2	2.0	3.3	3.7	1.5	1.4	8.4	4.7	28.9	2.2	2.2	1.0	0.62
YGL091C	2.0	1.8	1.0	1.7	0.8	1.6	1.8	10.8	6.0	2.1	1.2	2.5	3.1	0.7	1.0	1.4	1.8	0.96

酵母遺伝子
表4 エネルギー系タンパク質遺伝子
化学物質存在下の発現mRNA/不存在下の発現mRNA

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	強度
YCR107W	12.1	2.6	1.8	1.6	0.7	1.5	1.5	15.6	196.6	34.0	23.0	0.9	4.0	8.3	4.8	3.1	1.3	1.1	0.59
YDL243C	14.5	2.7	2.4	1.0	1.1	2.2	1.6	11.8	64.2	29.6	19.6	1.1	4.1	12.0	4.2	3.0	1.8	1.5	0.76
YFL056C	19.0	2.3	2.3	1.5	0.9	0.6	1.4	18.5	162.3	31.3	68.3	1.0	4.7	7.8	5.0	3.4	1.0	1.1	0.55
YFL057C	20.9	5.9	1.5	1.8	0.9	1.2	1.8	18.0	51.8	46.1	27.7	1.0	4.1	23.4	3.1	3.9	1.6	1.3	0.71
YJR155W	7.6	3.7	1.4	2.5	0.7	1.4	1.7	10.6	38.2	18.8	15.4	1.0	5.7	9.4	2.6	5.6	1.3	1.4	0.64
YNL331C	8.6	3.6	1.3	1.0	1.6	1.8	1.9	13.1	42.6	36.3	21.8	0.9	3.1	7.5	2.3	4.0	1.7	1.3	0.58
YOL165C	10.1	4.5	1.8	0.9	0.9	1.7	1.4	17.8	46.9	23.3	17.6	0.8	3.7	9.1	3.0	1.8	1.6	1.0	0.69
YPL171C	15.2	4.1	3.5	2.2	1.1	1.3	1.7	20.5	60.0	50.6	37.0	1.4	2.4	9.3	1.4	1.2	2.4	1.5	0.47
YDL021W	5.1	1.7	2.4	3.7	1.7	6.5	5.9	2.7	2.5	7.4	4.7	2.4	5.3	3.7	0.7	7.3	1.9	3.2	0.47
YGR043C	2.6	3.7	3.2	7.9	0.9	16.3	6.5	2.6	10.9	8.4	3.6	3.3	6.9	4.1	3.0	13.7	1.6	4.8	0.66
YHR179W	3.3	2.3	2.6	0.7	1.2	3.7	1.9	3.3	3.6	5.8	2.0	2.2	2.6	5.8	2.7	1.0	1.9	1.6	2.69
YJR048W	1.3	0.9	2.2	1.4	0.8	0.5	0.3	0.9	0.5	1.5	1.0	0.8	0.4	2.5	0.6	1.5	1.2	1.2	1.19
YKR097W	1.6	2.4	1.3	3.3	1.1	1.7	3.7	2.5	1.9	3.3	0.8	1.8	17.5	2.1	2.5	2.2	1.1	1.5	0.16
YML087C	1.8	1.6	0.8	2.5	0.9	0.9	1.1	1.3	1.9	4.9	1.6	0.8	1.5	2.1	0.3	2.0	0.7	0.8	0.52
YPL088W	3.3	1.3	0.6	2.5	1.5	7.1	3.7	1.9	0.6	2.8	1.1	3.6	4.8	1.6	3.2	4.3	9.1	8.3	0.69
YDL174C	0.9	1.8	0.9	1.3	0.5	1.7	3.6	0.8	0.5	1.7	0.9	2.8	5.9	1.1	0.6	5.1	2.2	4.0	0.63
YCR012W	1.2	1.5	5.1	1.2	1.1	2.5	1.4	0.8	1.4	1.5	1.8	1.2	4.1	0.9	1.4	1.4	0.8	1.3	4.48
YFR053C	1.8	1.4	3.0	2.2	0.9	3.2	2.1	2.8	0.6	1.1	1.5	1.7	3.0	0.6	0.6	3.0	1.4	2.2	4.17
YGL062W	0.6	1.3	1.1	0.6	0.9	1.0	1.3	0.8	1.6	2.5	0.7	1.6	4.5	1.2	2.7	1.5	1.1	0.9	0.77
YGR192C	1.4	1.0	3.8	1.0	1.1	1.7	1.7	1.1	0.9	1.3	2.3	2.2	3.4	1.0	1.9	1.1	1.1	1.3	7.49
YGR244C	1.0	1.2	1.6	1.6	0.8	2.6	3.9	1.8	1.4	1.1	1.8	1.9	2.6	1.2	2.0	2.6	1.9	3.1	1.12
YGR254W	1.2	1.3	3.8	1.3	1.2	1.9	1.5	1.4	0.8	1.2	1.3	1.7	3.1	0.6	2.4	1.4	1.3	1.2	7.01
YIL160C	0.8	2.4	2.3	3.5	1.0	1.6	1.1	1.2	3.2	3.8	2.4	1.0	2.3	1.5	5.6	8.8	2.4	3.0	0.27
YJL052W	1.6	0.9	4.0	1.8	0.7	2.4	2.1	1.5	1.6	2.0	4.3	2.4	5.6	1.3	2.3	2.3	1.2	1.9	6.19
YJR009C	1.1	1.7	5.6	1.0	1.2	1.6	1.6	1.1	1.1	1.3	1.1	1.5	2.7	1.0	2.1	1.5	1.1	1.3	5.86
YLR345W	1.4	1.4	1.4	1.2	1.2	1.6	1.2	1.4	4.5	4.0	2.5	1.6	3.5	1.5	1.0	1.2	1.2	1.4	2.65
YMR118C	1.3	2.9	1.4	1.6	1.2	2.0	1.0	1.0	9.3	1.4	0.7	0.8	4.2	0.9	0.9	8.1	0.8	1.0	0.38
YNL071W	0.9	0.9	1.7	1.5	0.6	1.3	1.4	0.9	1.1	1.2	1.6	1.3	2.5	0.8	1.1	1.1	1.0	1.2	1.61

YNL241C	1.3	2.5	4.3	1.0	0.8	0.9	3.2	0.9	3.4	7.4	3.0	2.0	4.9	1.1	7.0	2.8	1.0	1.0	0.68
YPL240C	0.7	1.4	2.4	0.9	1.3	1.2	1.4	1.2	3.5	2.6	1.0	0.8	2.9	0.7	1.2	0.7	0.8	1.0	4.83
YAL060W	1.1	1.8	3.2	2.7	1.2	4.2	3.3	0.9	0.6	2.5	2.4	0.8	2.2	0.9	0.9	3.2	1.1	1.8	2.39
YCL040W	0.9	5.6	10.1	2.0	0.5	3.5	2.9	0.7	0.9	3.0	8.2	2.3	5.6	0.7	3.4	3.1	1.4	1.7	1.98
YDR001C	1.0	2.2	2.6	1.0	1.1	2.2	1.5	0.9	2.2	3.0	0.7	1.1	2.8	1.0	4.4	1.9	1.1	1.6	0.75
YDR231C	1.1	1.6	1.0	1.5	1.1	2.2	1.7	1.3	1.5	1.4	1.3	1.1	2.4	1.5	1.0	3.0	1.2	1.3	0.92
YER178W	0.8	0.9	3.6	1.0	0.7	2.5	1.6	0.8	1.7	1.3	2.5	1.3	2.4	0.9	1.8	1.0	1.1	0.9	2.18
YGR008C	2.4	3.0	1.7	3.2	0.9	2.9	3.7	1.9	3.1	2.4	2.6	2.0	3.4	1.3	1.5	2.3	1.7	4.2	3.03
YGR256W	1.2	1.5	2.3	0.8	0.9	6.2	1.4	2.2	3.4	2.5	2.7	1.5	3.9	1.1	2.7	5.3	1.1	0.8	0.94
YHL008C	0.9	0.5	1.0	1.6	0.8	0.8	0.7	0.9	1.6	1.7	1.4	0.8	1.8	1.0	1.8	0.9	0.8	0.9	0.40
YHR174W	1.1	1.4	3.3	1.2	1.3	1.5	1.6	1.2	1.0	1.5	1.4	1.5	3.6	0.6	2.0	1.1	1.0	1.2	7.34
YIL045W	1.7	1.4	1.9	2.2	1.3	1.7	1.6	1.1	2.1	3.2	1.2	1.5	2.0	1.6	0.6	2.9	1.1	1.8	0.37
YKL035W	1.0	0.9	4.8	1.2	0.8	1.2	0.6	1.0	0.8	1.2	2.1	1.0	2.0	0.6	1.0	1.5	1.0	1.9	2.54
YKL152C	1.4	1.3	1.9	0.9	1.3	1.6	1.5	1.0	0.9	1.5	1.7	1.5	2.7	1.0	1.8	2.0	1.1	1.7	3.28
YML054C	1.5	1.8	1.3	3.4	1.3	1.8	1.2	1.5	4.1	1.8	1.4	1.8	2.8	2.1	1.1	7.8	1.1	1.6	0.25
YML100W	0.8	2.7	10.6	1.4	0.9	2.8	2.2	0.7	1.7	1.4	3.2	1.2	3.8	1.2	1.8	2.2	1.0	1.5	0.88
YML125C	0.8	0.9	0.7	0.7	0.9	1.3	1.0	1.3	2.6	1.6	1.0	1.0	2.2	1.6	1.9	0.7	1.2	0.9	2.21
YMR089C	1.0	1.1	0.9	0.9	0.8	1.2	1.2	1.3	5.6	2.5	1.3	0.8	2.3	0.9	1.8	1.1	0.9	1.1	0.69
YMR105C	2.0	3.0	5.0	4.2	0.9	2.8	2.8	1.1	0.6	2.9	3.0	1.7	3.3	1.0	0.9	2.0	1.6	2.6	1.21
YNL237W	1.3	1.3	1.5	1.0	1.5	4.6	4.9	1.1	0.9	2.1	1.5	1.8	3.2	1.3	1.6	4.4	1.3	1.1	0.21
YOL126C	1.1	0.8	1.0	1.6	0.7	1.5	1.4	0.9	0.8	2.4	1.8	1.1	2.6	1.2	1.4	2.5	1.6	2.4	0.59
YOR347C	0.9	0.9	2.1	2.2	0.7	0.9	0.9	0.8	0.5	0.9	1.4	1.2	1.8	0.9	2.0	1.4	1.7	1.3	1.31
YPR026W	0.9	1.2	5.0	1.3	0.8		1.3	1.0	0.9	3.1	1.6	1.2	2.3	1.5	3.1	2.5	0.9	1.3	0.26
YAL038W	1.0	1.0	3.0	1.4	1.4	1.3	0.9	1.1	0.1	1.1	1.0	1.2	1.8	0.5	3.1	0.9	1.0	1.0	7.02
YDR380W	0.8	0.8	0.8	1.7	1.1	0.4	0.5	0.2	0.2	0.3	0.4	0.4	0.4	0.6	2.4	0.2	0.8	0.8	1.04
YLR273C	1.5	1.0	1.3	2.4		1.2	1.2	1.3	2.8	2.4	1.4	0.9	1.7	1.3	2.6	1.5	1.0	1.0	0.20
YGR207C	1.5	1.1	1.0	1.1	1.5	2.8	1.7	1.9	2.1	2.6	1.4	1.1	1.0	2.2	0.6	1.8	1.2	1.8	1.49
YNL037C	1.4	1.8	1.7	1.1	1.7	2.8	2.8	1.0	0.6	3.2	1.4	1.3	1.9	1.3	0.9	1.4	0.9	1.3	2.05
YOR136W	1.0	0.9	3.5	1.0	1.5	3.9	3.2	1.1	0.3	3.4	1.4	1.2	1.5	0.9	1.2	1.3	0.8	1.3	3.20
YPL271W	1.2	3.2	4.1	1.2	1.4	3.3	1.2	0.9	0.6	1.2	1.7	0.8	1.2	1.3	0.8	1.4	1.2	1.3	1.34
YAL054C	1.2	1.1	1.4	1.6	1.1	2.2	1.1	1.1	8.9	4.1	1.3	1.0	1.8	1.3	0.9	2.5	1.5	1.4	0.24

YEL011W	2.0	1.6	1.7	6.3	1.1	2.8	2.7	0.9	2.5	1.6	3.7	1.5	1.5	1.5	0.4	2.4	1.4	2.5	0.89
YFR015C	1.2	0.8	3.2	2.1	1.2	3.0	7.3	0.7	0.3	1.8	3.9	0.4	2.5	3.1	0.4	2.4	1.3	1.2	0.66
YGL253W	0.8	1.0	3.2	0.7	1.3	2.4	1.7	1.1	0.3	1.4	1.0	1.2	1.5	0.5	0.8	0.4	0.7	0.8	4.63
YIL111W	1.9	1.0	1.8	2.7		2.6	3.2	1.2	1.6	1.1	2.1	0.9	1.7	1.5	1.1	2.5	1.9	3.9	1.52
YKL150W	1.1	2.0	3.0	1.4	1.4	2.3	2.4	1.3	1.1	1.3	1.9	1.2	1.8	1.4	0.9	6.1	1.2	2.7	2.20
YPR006C	1.9	1.5	0.5	1.9	2.0	2.4	2.8	1.5	1.5	3.9	2.4	1.1	1.8	1.2	0.7	1.6	1.8	2.1	0.46
YBR145W	1.5	0.7	2.8	0.9	1.1	11.5	58.8	1.0	0.1	1.1	1.1	1.0	2.0	2.2	1.2	3.6	1.7	2.0	2.17
YBR299W	2.0	0.9	1.1	3.5	1.6	0.8	3.6	2.2	1.1	5.3	2.4	1.2	0.7	1.4	0.6	3.9	1.0	1.1	0.32
YEL020C	1.0	1.5	0.8	2.9	1.5	1.3	2.4	1.2	1.4	1.1	1.3	0.8	1.2	1.0	1.4	2.1	1.2	1.3	0.31
YGL134W	1.2	1.3	0.5	0.8	1.4	1.2	2.3	1.4	1.1	1.4	1.1	0.9	0.7	1.1	0.5	1.7	0.9	1.3	0.53
YOL157C	1.0	1.1	1.3	2.5	1.4	0.9	2.7	1.4	2.3	4.8	1.2	1.2	1.4	1.2	1.1	3.5	1.4	1.3	0.41
YBR126C	0.8	1.9	5.6	1.2	0.7	2.9	2.3	0.6	1.7		1.1	1.3	2.1	0.7	1.0	1.7	1.5	1.3	1.96
YCR005C	1.2	1.9	2.0	1.2	0.9	1.6	4.4	1.2	1.5	1.5	2.1	0.5	0.7	0.8	0.7	0.7	1.6	1.7	2.38
YIL172C	1.1	1.1	1.6	1.7		1.3	2.5	1.6	2.8	7.1	1.0	1.4	2.0	1.3	1.4	2.8	1.1	1.2	0.42
YOR221C	0.8	1.0	0.9	1.1	1.7	0.8	2.1	0.9	1.4	1.7	1.1	0.8	1.0	1.1	1.0	1.4	0.9	1.2	0.39
YBR196C	0.8	0.6	3.9	1.4	0.8	0.8	1.4	1.1	0.3	0.9	2.3	1.0	1.4	0.5	1.9	1.1	0.8	1.0	6.60
YEL047C	1.3	1.9	3.2	1.2	0.8	0.6	1.3	1.0	2.7	2.3	4.2	1.2	1.6	1.1	1.0	1.3	0.9	1.0	1.02
YMR318C	1.8	2.4	2.2	0.7	1.2	2.1	0.8	3.6	2.3	4.8	3.6	0.8	1.8	1.7	1.5	1.1	1.1	1.1	3.17
YER061C	0.9	0.9	1.2	2.5	0.8	0.4	0.9	0.7	0.3	0.7	2.2	0.7	0.9	1.0	0.8	1.8	1.2	1.2	0.84
YJL045W	1.8	2.2	1.6	5.3	0.7	0.6	0.7	0.9	9.7	1.6	2.3	1.1	1.6	1.2	3.4	2.4	0.9	0.9	0.42
YLL009C	1.0	1.2	0.6	1.9	1.5	1.2	1.7	1.0	1.3	1.7	3.5	0.7	0.9	1.4	1.1	2.8	0.9	1.2	1.66
YPR160W	1.4	3.8	3.6	3.3	0.7	4.5	1.8	0.9	0.9	1.3	4.4	2.1	2.2	1.1	1.4	5.3	1.0	2.9	1.42
YDL085W	1.2	1.9	1.2	2.0	1.2	1.2	1.4	1.0	7.8	3.4	2.7	0.8	1.7	1.2	0.7	4.5	0.9	0.9	0.23
YJL221C	1.1	1.0	1.1	1.3	0.9	6.6	2.5	1.8	2.7	4.4	0.8	1.1	1.4	1.1	1.1	3.3	1.1	1.4	0.41
YKL085W	1.5	2.3	1.6	1.2	1.2	1.9	1.5	1.2	1.9	3.0	1.8	0.8	1.5	1.0	0.5	1.7	0.9	1.3	2.16
YLR174W	1.2	1.5	1.7	2.1	0.9	0.9	1.6	1.1	2.5	8.3	1.3	1.3	1.8	1.7	0.8	4.6	0.9	1.2	0.41
YNL009W	1.1	1.9	2.0	1.4	1.4	1.1	1.2	1.1	1.4	3.3	1.3	0.9	1.3	1.3	2.7	3.3	1.2	2.3	0.45
YNL117W	0.9	4.7	1.7	0.8	0.8		1.1	1.7	12.8	4.4	1.4	0.7	1.3	2.0	2.6	1.6	1.1	0.9	0.24
YAL061W	1.7	2.4	3.3	3.8	1.0	1.0	2.0	0.8	5.5	1.4	4.1	1.1	1.4	0.7	0.6	1.1	1.4	1.2	0.88
YBR117C	0.8	1.6	1.5	1.4	0.9	2.3	1.0	0.7	5.9	1.5	0.4	0.8	2.1	0.9	1.0	12.0	0.7	0.7	0.49
YEL071W	1.1	1.6	2.6	0.4	1.3	1.9	2.0	1.2	3.6	2.8	2.1	0.9	1.6	1.2	1.6	1.2	1.1	1.2	1.13

YGR112W	1.0	2.9	1.1	1.3	0.9	1.1	1.3	2.6	1.3	1.3	0.7	1.1	1.1	1.2	2.8	0.9	1.2	0.31
YLR164W	1.0	2.4	0.3	1.0	1.2	1.2	1.1	5.3	2.0	3.2	0.7	1.0	1.5	0.7	11.0	1.5	1.2	0.31
YNR032W	1.0	1.5	1.0	2.1	1.5	1.0	1.1	6.2	2.4	1.4	0.6	1.3	1.4	0.9	1.0	1.2	1.3	0.71
YPL031C	0.9	2.0	1.4	0.8	1.5	1.8	1.6	5.7	1.4	1.4	0.8	1.6	0.9	0.7	2.0	1.4	1.2	0.49
YPR048W	1.3	2.0	0.9	1.1	0.9	0.6	0.9	4.0	2.1	1.0	0.8	0.6	1.2	0.6	0.8	0.7	0.8	0.75
YBL058W	0.9	1.5	0.5	1.1	1.6	0.9	1.5	2.6	2.1	1.3	0.8	1.6	1.3	1.8	1.8	1.0	1.4	1.42
YBR001C	0.9	1.4	1.1	1.4	0.9	1.1	0.9	2.3	2.1	1.0	1.0	2.0	1.2	1.8	1.4	1.0	1.6	0.61
YCR105W	2.2	1.2	1.2	3.0	0.9	1.0	1.0	2.0	3.9	2.3	0.9	1.9	1.9	3.1	1.3	1.3	1.1	0.36
YIR031C	0.9	1.6	0.6	0.6	1.6	1.7	1.4	2.6	1.0	1.2	0.8	1.0	1.2	0.8	0.7	0.9	0.8	0.44
YGL191W	2.3	1.6	1.4	1.8	0.9	1.6	1.0	1.1	1.3	1.6	0.9	1.1	1.6	0.7	1.8	1.2	1.7	2.35
YLR038C	2.6	1.1	0.6	2.1	1.8	1.2	1.0	0.4	0.9	1.4	0.6	0.5	1.6	0.7	2.1	1.2	2.1	1.52
YGR087C	1.0	15.0	1.7	0.6	1.0	1.1	1.0	0.2	0.9	0.8	1.2	1.2	0.7	3.5	0.6	1.0	0.6	1.88
YGL256W	0.9	5.3	1.1	1.3	0.7	0.7	0.5	0.4	1.2	1.0	0.9	0.8	0.9	1.0	0.7	0.7	0.8	0.90
YDL181W	1.4	1.8	1.9	1.8	1.7	1.2	1.1	0.7	0.8	0.8	0.9	0.9	1.1	0.4	1.1	1.5	1.4	0.85
YPL262W	1.1	1.7	3.8	1.2	0.6	1.6	1.3	1.4	5.8	1.4	1.1	1.5	1.2	0.6	1.4	1.1	1.2	0.79
YLR377C	1.1	2.6	1.8	1.2	1.0	0.7	0.9	1.8	1.6	0.6	0.6	1.2	2.9	0.8	2.7	0.9	1.4	0.14
YBR221C	0.8	0.7	3.2	1.5	1.3	1.7	1.5	1.0	1.3	1.2	1.3	1.7	0.8	1.1	1.5	0.9	1.0	3.62
YKL141W	1.6	1.1	4.7	1.7	1.5	1.2	0.5	0.8	0.5	1.2	0.8	0.8	1.4	0.6	2.8	0.9	1.8	2.84
YLR134W	0.9	0.6	2.3	0.8	1.3	2.5	1.1	0.1	0.7	1.1	1.2	1.5	0.6	1.7	0.5	0.6	0.8	3.47
YLR258W	1.7	1.0	4.2	3.5	0.9	1.8	1.8	0.8	1.3	1.2	0.9	1.4	1.2	0.6	1.7	1.0	2.0	1.36
YOR178C	1.4	1.3	4.8	2.3	1.0	2.7	0.9	0.2	1.7	4.1	1.7	1.0	1.0	1.1	1.7	1.0	1.5	0.56
YBL099W	0.8	0.9	3.1	1.4	1.0	0.9	0.9	0.9	0.7	2.1	1.0	0.9	0.6	1.0	0.9	0.7	1.2	3.49
YDR050C	1.9	1.3	2.3	1.8	0.9	1.7	1.5	0.4	1.3	2.0	1.4	2.0	1.2	1.9	1.3	1.1	2.3	6.26
YDR178W	2.0	2.0	3.4	2.2	0.9	2.1	0.6	0.9	0.8	2.0	1.3	1.5	1.5	0.7	3.0	1.2	2.3	2.27
YDR298C	1.3	1.2	2.6	1.3	1.3	1.2	1.0	1.0	1.6	1.2	1.1	1.2	1.5	0.8	2.0	1.1	1.6	2.69
YEL024W	1.5	0.9	3.8	1.1	1.3	1.1	0.7	0.7	0.6	0.9	0.8	0.6	1.1	0.6	2.1	1.1	1.5	1.59
YJL121C	1.0	0.5	1.9	0.8	1.0	1.1	0.7	0.1	0.4	1.1	0.6	0.7	0.9	1.0	0.6	1.1	1.0	1.00
YJR121W	1.2	1.1	3.3	1.0	0.8	1.5	1.0	0.8	1.3	0.9	0.8	1.0	0.7	0.9	1.2	1.1	1.4	3.99
YKL060C	1.7	0.8	2.5	1.0	1.6	1.3	1.2	0.3	0.8	2.1	1.3	1.2	0.8	1.6	1.5	1.2	1.7	6.01
YKL148C	0.9	0.8	3.7	0.7	0.8	0.5	0.6	1.7	1.7	1.5	0.8	0.8	0.8	0.6	1.1	0.8	1.0	0.54
YLL041C	1.5	0.5	4.6	1.0	1.6	1.2	0.3	0.7	0.8	1.3	0.8	1.0	1.2	0.4	3.1	1.1	1.7	1.75

YLR044C	0.8	0.6	2.2	0.9	1.7	1.5	1.3	0.7	0.0	1.2	1.1	1.4	1.7	0.5	2.2	0.6	0.9	0.9	5.16
YLR284C	0.9	1.0	3.8	1.9	1.6	0.9	0.8	1.2	0.9	0.9	1.5	0.6	0.8	1.3	1.0	4.5	2.9	8.1	0.84
YLR304C	0.7	0.6	5.0	0.7	0.6	0.1	0.6	0.6	0.1	2.2	1.6	1.0	0.5	0.7	1.6	1.8	0.5	0.7	2.39
YLR354C	1.2	2.5	2.3	1.5	1.6	0.4	1.1	1.4	0.4	0.9	1.7	1.2	1.0	0.9	2.4	1.3	1.0	1.5	4.53
YMR205C	0.5	0.7	2.3	0.8	1.2	1.2	0.9	0.7	0.3	0.8	1.0	1.1	1.3	0.5	0.9	0.9	0.6	0.5	4.75
YMR261C	0.8	1.6	3.6	0.8	0.9	0.6	1.3	0.7	1.6	1.3	0.8	0.9	1.6	0.6	0.8	1.6	0.7	1.1	0.78
YMR323W	0.8	1.1	2.9	1.1	0.7	0.4	1.1	0.8	0.5	1.3	2.5	1.2	1.8	1.2	37.3	0.6	1.1	0.6	1.04
YOL086C	1.1	0.5	2.2	1.1	1.9	1.7	1.9	0.8	0.1	1.2	2.6	1.3	1.7	0.6	1.6	1.4	1.1	1.3	4.19
YOR142W	1.3	1.2	3.4	1.0	1.4	1.6	1.0	0.8	1.1	1.5	1.5	0.8	1.4	0.8	1.1	0.8	0.9	1.0	1.31
YPL061W	0.4	1.4	5.0	1.3	1.6	1.7	0.5	0.8	1.3	0.7	1.1	1.0	1.1	0.6	1.7	1.0	1.6	2.6	3.23
YDL107W	1.3	1.3	1.0	2.2	1.0	1.3	1.8	1.8	1.2	1.8	1.0	1.0	1.2	1.5	1.0	2.0	1.1	1.5	0.51
YDR529C	1.8	1.0	0.9	3.2	1.2	0.8	0.5	1.3	0.5	0.6	0.8	0.6	0.7	1.5	0.5	1.8	1.0	2.3	3.11
YGL018C	1.5	1.0	1.8	3.0	1.1	0.4	1.1	0.8	0.5	1.4	1.1	1.0	1.3	1.2	1.1	1.5	0.8	1.0	0.36
YBR185C	1.5	1.0	1.3	2.0	0.8	1.2	1.2	1.1	0.9	1.6	1.2	0.7	1.0	1.7	1.0	1.7	0.8	1.3	0.89
YEL039C	1.1	0.7	1.3	5.1	0.9	1.5	0.6	1.1	1.2	1.2	1.7	0.6	0.5	1.4	0.4	3.5	0.7	1.1	1.59
YGR174C	1.1	1.6	0.6	2.4	1.0	1.4	1.0	1.6	1.8	0.7	1.3	0.9	1.5	1.6	0.7	3.2	1.3	2.3	1.05
YKL016C	1.5	1.3	0.7	1.7	1.5	0.8	1.5	1.6	1.3	1.8	1.3	1.0	1.3	1.6	0.7	1.8	1.0	1.7	2.08
YLR395C	1.8	1.3	2.2	1.9	0.7	0.4	0.8	1.0	1.0	0.9	1.5	0.6	0.5	1.7	0.4	1.2	1.2	2.3	1.76
YML120C	1.1	1.2	1.9	1.9	0.6	0.6	0.8	0.9	1.3	1.5	1.3	0.9	1.2	0.8	0.5	1.5	1.0	1.6	0.74
YMR073C	1.1	1.1	1.2	1.5	0.8	0.9	1.0	1.1	1.2	1.2	0.9	0.8	1.2	2.0	0.9	1.5	0.8	1.2	0.69
YOR388C	1.0	1.6	1.3	4.7	1.3	1.4	1.0	0.7	0.1	1.4	1.3	0.7	1.1	1.3	4.0	0.8	1.0	0.9	0.21
YPL275W	0.6	1.5	1.3	5.1	1.2	1.0	1.1	1.0	0.2	1.2	0.9	0.6	1.0	1.0	1.4	0.9	1.0	1.0	0.28
YPL276W	1.2	1.5	1.6	3.0	1.5	1.1	1.2	0.9	-0.2	1.8	-0.4	0.6	0.9	0.9	1.0	0.6	1.1	0.8	0.22
YGL205W	1.0	0.9	0.7	0.8	1.1	1.6	0.8	1.2	0.5	0.6	0.4	1.1	1.0	1.0	2.0	4.1	3.9	9.1	0.24
YJL166W	2.1	1.5	1.6	1.3	1.6	0.7	0.8	1.4	1.3	1.2	1.4	0.7	0.8	1.9	0.5	2.3	1.7	4.0	2.31
YNL202W	0.7	1.3	1.2	1.7	0.9	2.0	0.9	1.2	1.3	1.1	1.2	0.9	1.8	1.0	1.4	4.2	2.4	3.3	0.47
YDR377W	1.3	1.1	1.3	1.4	1.9	1.3	1.1	1.3	1.0	0.9	1.4	0.9	0.7	1.4	0.6	1.8	1.2	2.5	3.00
YGL187C	1.5	0.8	1.6	1.8	1.3	1.1	0.6	0.7	0.6	0.6	0.7	0.8	0.7	0.9	0.3	1.4	0.9	2.4	2.73
YJL216C	1.1	4.7	2.2	0.9	0.8	0.8	1.5	1.9	1.5	1.3	1.1	1.0	1.1	1.1	1.2	1.5	1.2	2.0	0.25
YKR009C	1.0	1.2	1.5	0.9	1.0	1.8	1.0	0.9	2.4	2.1	1.2	1.0	1.8	1.0	1.0	4.6	1.9	2.5	0.27
YCR046C	1.0	1.2	1.2	1.6	1.0	0.8	1.2	0.9	1.9	1.4	1.5	1.1	1.5	1.3	1.4	2.8	1.3	1.0	0.63

YML129C	1.1	0.9	0.9	1.2	1.7	1.7	1.8	1.2	1.4	2.2	1.2	0.8	1.0	1.4	1.1	2.9	1.3	1.04
YPR184W	1.2	1.4	5.7	2.2	0.9	1.5	1.3	0.7	1.9	3.2	3.6	1.4	2.5	1.3	1.5	3.1	1.7	0.37
YDL067C	1.8	1.0	1.6	1.3	2.0	0.9	0.8	1.1	0.9	0.9	1.4	1.0	0.6	1.4	0.7	1.8	1.7	1.85
YDL078C	0.7	1.1	1.2	0.8	1.3	1.1	1.7	1.0	1.1	1.0	1.7	0.8	1.0	0.8	0.5	2.2	2.0	1.65
YDR079W	1.3	1.1	0.8	1.1	1.2	1.7	1.3	2.6	0.9	0.8	1.3	1.1	1.3	1.5	0.6	2.6	1.3	1.06
YGR062C	0.9	1.0	0.7	1.4	0.7	0.9	1.3	0.8	1.0	1.4	1.6	1.0	1.5	1.2	0.5	1.8	1.1	0.54
YKR058W	1.3	0.9	1.4	1.9	0.8	1.4	1.4	1.5	1.3	1.2	1.5	0.9	0.7	1.3	0.5	2.6	1.6	0.73
YLR295C	1.5	1.1	1.1	1.7	2.2	1.1	1.1	1.2	1.4	1.2	1.3	0.5	0.8	1.2	0.5	2.4	1.5	1.07
YMR267W	0.8	1.8	0.7	0.9	1.0	1.4	1.2	1.5	0.4	0.8	1.0	0.8	0.7	1.0	0.9	2.6	1.3	0.94

表5 トランスポート促進タンパク質遺伝子
化学物質存在下の発現mRNA／不存在下の発現mRNA

酵母遺伝子	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	強度
YBR008C	3.0	2.4	4.9	0.7	0.9	1.0	0.9	2.8	54.6	21.1	9.4	0.8	2.0	4.1	0.8	3.1	2.0	1.2	0.37
YBR296C	7.0	4.3	2.2	2.5	1.4	1.4	0.2	1.1	0.4	1.8	1.5	1.6	2.0	2.3	1.7	0.3	3.8	4.0	0.54
YDR406W	0.8	1.2	3.1	1.1	1.0	5.9	1.8	0.6	1.1	1.7	1.4	3.9	7.7	0.5	0.8	5.5	2.7	5.6	0.53
YOR153W	1.6	0.9	5.1	1.1	1.0	7.4	2.6	0.5	3.2	1.2	1.0	4.0	11.8	0.3	3.6	1.6	2.5	3.1	1.91
YGR281W	1.2	1.0	1.3	2.2	0.6	1.9	0.9	0.7	2.7	1.4	0.7	2.4	12.9	0.9	2.1	1.1	2.8	3.1	1.04
YHL047C	0.6	4.4	1.0	1.0	1.2	8.4	16.8	1.5	1.2	11.9	1.0	2.6	3.8	0.5	1.1	2.3	1.2	1.2	0.74
YBR294W	6.3	14.4	0.9	2.6	1.4	1.2	1.1	1.0	5.2	5.2	1.2	1.0	3.1	1.3	1.0	0.9	1.0	0.9	0.18
YGL006W	2.5	1.3	1.3	2.6	1.0	1.0	1.3	0.9	3.0	1.2	0.8	0.9	4.5	0.9	1.1	1.7	2.4	4.1	1.37
YGR197C	1.1	2.4	2.5	1.0	0.7	0.5	1.3	0.8	16.7	3.2	1.1	1.2	2.4	1.5	1.0	1.5	1.7	1.9	0.37
YJL034W	0.7	1.7	3.0	0.8	1.2	1.1	1.3	1.5	2.8	1.1	1.3	1.6	6.1	0.6	7.9	2.6	1.1	1.0	4.58
YNL055C	1.1	1.8	5.5	2.0	0.9	2.6	1.2	0.7	1.1	1.0	1.9	1.7	2.4	0.9	1.1	2.6	1.2	1.7	4.10
YBR052C	1.6	1.6	1.5	2.6	1.4	2.1	3.0	1.3	2.3	2.5	1.7	1.3	2.1	1.5	0.7	3.1	1.8	3.1	2.77
YBR207W	0.8	1.7	0.8	2.0	1.7	1.6	4.3	0.9	1.7	2.2	1.1	0.9	2.2	0.9	1.4	1.4	1.2	1.4	1.39
YBR293W	1.9	3.1	1.0	1.8	0.8	0.9	0.9	0.9	5.5	2.4	1.1	1.0	3.0	1.4	3.1	1.6	1.0	0.9	0.94
YDL198C	1.4	1.0	2.1	1.4	0.7	0.8	1.0	1.1	1.9	2.7	2.5	1.2	2.0	1.7	1.2	1.4	1.5	1.1	1.19
YDL245C	1.0	2.4	1.6	2.2	1.3	1.1	1.2	1.2	0.4	2.8	1.5	1.0	2.0	1.2	1.8	1.5	1.0	1.1	0.28
YDR497C	0.7	0.5	0.6	1.3	0.7	0.6	0.5	0.6	0.4	0.8	0.7	0.9	2.7	0.6	10.1	2.8	1.2	1.6	1.45
YER053C	1.6	1.8	1.9	1.7	0.6	2.8	2.8	1.3	1.3	3.9	2.4	1.7	4.1	1.3	1.1	2.8	1.2	2.3	1.83
YFL041W	0.7	1.6	1.4	1.2	1.2	2.0	3.4	1.0	0.8	5.1	0.9	1.1	1.8	1.0	0.9	1.4	1.1	0.9	0.89
YGR055W	2.5	5.7	12.0	0.7	1.3	1.1	0.6	1.1	5.0	2.4	1.5	0.9	1.9	1.2	2.1	0.6	0.7	0.7	1.42
YJL219W	1.2	2.5	3.1	1.6	1.2	1.5	0.9	1.5	4.0	2.3	2.3	1.1	4.0	1.1	2.6	1.4	1.6	1.2	0.91
YJR106W	0.9	3.8	1.5	1.1	0.9	1.2	1.0	0.9	2.0	1.6	1.6	0.9	3.5	0.9	1.2	1.9	1.2	1.3	0.29
YKL146W	0.8	1.3	1.3	0.9	1.0	1.3	0.9	0.8	4.6	2.8	0.9	1.1	2.7	1.0	1.5	1.3	1.0	0.9	0.42
YLL028W	0.6	0.9	4.6	0.5	0.9	1.7	1.0	0.7	1.2	2.3	0.7	1.3	4.1	0.7	3.1	0.6	1.2	1.2	1.02
YLR348C	1.1	4.5	1.2	1.2	0.9	1.9	0.9	0.9	2.1	1.3	1.3	0.9	1.9	1.0	2.4	1.1	1.1	1.0	0.64
YOL119C	2.6	4.8	1.5	2.3	1.5	0.9	2.2	2.0	5.0	7.4	3.4	0.9	1.6	2.4	4.7	2.8	1.4	1.0	0.37
YOL163W	1.5	3.2	2.1	3.3	0.9	0.5	0.9	1.1	7.5	6.2	1.6	1.0	2.4	1.2	1.0	1.4	0.8	0.8	0.30
YOR035C	1.2	1.2	0.3	1.2	1.0	1.9	1.3	1.0	1.3	1.7	1.0	1.1	2.5	0.9	3.8	1.8	1.6	2.1	0.52

YOR130C	0.8	1.7	1.4	1.0	1.8	1.6	1.3	0.8	2.0	1.7	0.6	0.9	2.1	1.3	1.0	0.8	1.5	1.1	0.51
YOR273C	0.7	1.0	1.7	1.0	1.1	0.4	0.4	0.6	0.6	0.5	1.5	0.8	2.6	0.5	0.8	0.6	3.2	3.1	1.20
YOR332W	1.1	1.0	1.0	1.0	0.9	1.8	0.9	1.5	1.8	1.1	1.5	1.0	2.2	1.1	1.2	1.2	1.3	1.7	3.58
YCR098C	1.6	3.0	1.7	2.0	1.4	1.6	1.2	1.0	1.4	2.4	1.3	1.3	1.4	1.1	11.0	0.8	1.7	1.6	0.22
YGR138C	1.1	1.6	1.0	1.2	0.8	0.8	0.7	1.0	0.5	1.0	0.7	0.6	0.6	0.9	4.5	0.7	0.7	0.7	1.24
YBR295W	1.4	1.5	3.3	1.1	0.8		1.6	0.9	1.2	3.3	1.1	0.9	1.8	1.1	4.8	1.4	1.3	1.2	0.27
YGL255W	0.7	0.9	0.9	0.8	1.4	1.1	1.0	0.7	0.3	5.0	0.5	0.7	0.2	1.0	2.6	0.5	0.6	0.5	1.36
YHL035C	0.7	1.3	0.9	1.9	0.9	4.1	1.7	1.1	0.6	4.6	0.9	1.4	1.1	0.8	3.1	2.4	1.1	1.2	0.77
YIL022W	0.8	0.7	1.1	1.6	0.8	1.2	0.7	0.8	1.1	1.3	1.0	0.9	1.2	0.6	2.9	1.1	0.8	0.7	0.52
YLR378C	0.7	0.9	2.6	0.5	1.0	1.2	0.7	0.5	1.1	0.7	1.0	1.2	1.6	0.4	5.9	0.4	0.9	0.7	1.23
YCL038C	1.6	1.6	1.4	1.6	1.2	3.2	1.5	1.2	1.1	0.9	2.0	1.3	1.9	1.3	2.0	1.8	1.4	1.5	1.04
YFL054C	1.6	1.1	1.4	2.2	1.3	2.4	1.1	1.5	2.0	2.3	1.7	1.2	2.3	0.9	1.4	1.3	1.7	1.4	1.06
YHL040C	1.6	4.9	1.5	0.4	1.1	7.3	4.0	1.5	1.1	11.3	1.7	2.0	2.0	1.1	3.4	1.0	1.4	1.0	0.69
YKR039W	1.4	3.5	1.3	1.7	1.0	2.8	1.0	1.0	1.9	2.0	1.9	1.5	1.3	1.2	1.7	1.9	0.9	1.1	0.40
YPL271W	1.2	3.2	4.1	1.2	1.4	3.3	1.2	0.9	0.6	1.2	1.7	0.8	1.2	1.3	0.8	1.4	1.2	1.3	1.34
YBR068C	1.1	1.0	1.9	2.5	1.4	1.9		1.0	0.8	2.5	0.8	0.8	2.2	1.8	1.6	5.5	1.1	1.3	1.99
YCR037C	0.7	1.0	0.8	0.8	1.3	1.8	1.0	0.7	0.6	0.6	0.8	0.7	1.3	0.8	1.0	1.1	1.4	0.9	0.74
YDL128W	0.8	1.1	2.1	1.0	1.0	2.3	0.9	0.8	0.5	0.7	1.2	0.9	1.6	0.7	1.1	1.0	0.9	1.0	2.80
YDR270W	0.7	1.5	1.4	1.3	1.0	2.2	1.7	1.2	2.9	3.6	1.0	1.0	1.8	1.0	1.4	1.1	0.9	0.7	0.38
YEL065W	0.3	3.8	1.2	0.4	1.4	2.3	4.3	0.9	0.1	4.9	0.6	1.7	0.8	0.4	2.2	2.6	0.7	0.6	2.10
YGL008C	0.6	0.7	3.1	0.9	0.8	1.9	1.4	0.7	0.0	0.4	0.7	2.4	1.9	1.2	1.0	2.1	1.1	1.0	4.08
YGL104C	0.8	2.0	2.1	1.8	1.0	2.1	1.2	0.8	4.6	2.1	1.8	1.1	2.0	1.0	0.9	1.7	1.3	1.3	0.58
YGL167C	0.9	0.7	1.6	1.3	1.2	2.0	1.2	0.8	1.3	1.1	0.8	1.1	1.5	0.8	1.3	1.3	1.4	1.4	1.41
YGR065C	0.8	1.5	2.6	1.1	1.2	2.4	2.4	1.0	1.2	2.6	1.1	0.5	0.8	1.3	1.2	1.1	0.7	0.7	0.68
YHR092C	2.3	1.0	7.5	2.5	1.4	1.7	0.5	1.5	0.2	0.9	1.5	1.0	0.5	1.6	0.2	1.2	0.9	1.3	6.09
YIL088C	0.9	2.1	2.1	1.3	1.6	2.2	1.7	0.8	1.0	1.7	1.8	0.9	1.5	1.2	1.2	1.8	1.2	1.4	1.89
YNL259C	1.6	3.5	1.1	1.2	1.1	3.9	3.8	1.5	1.6	2.1	1.6	0.7	1.1	1.4	0.7	1.7	2.6	2.4	1.22
YOR270C	0.7	0.5	2.0	0.8	0.8	1.8	1.0	0.6	0.4	0.9	1.5	0.7	1.3	0.7	1.1	0.8	0.9	0.9	3.49
YPL265W	0.7	0.4	2.3	1.1	1.0	2.3	8.9	2.3	0.2	1.2	1.8	0.9	1.1	1.1	1.2	2.0	0.5	0.4	1.42
YPR124W	0.2	0.4	0.3	1.4	2.0	2.0	2.9	2.7	0.2	1.5	2.0	0.8	0.6	0.4	1.1	2.4	1.0	1.3	2.57
YER119C	0.7	2.1	1.8	0.7	0.8	1.3	0.8	0.6	5.8	1.2	2.2	0.7	1.6	1.0	2.3	0.8	1.0	0.9	0.32

YFL055W	2.0	6.7	1.3	2.5	1.5	1.1	1.4	1.3	23.9	6.5	2.7	0.9	1.3	1.5	0.7	1.4	1.4	1.0	0.23
YLL055W	2.6	19.0	4.8	1.7	1.0	1.4	1.7	1.4	19.1	14.0	3.6	0.7	1.5	1.3	0.7	2.8	1.1	1.3	0.47
YHL036W	2.2	4.8	3.4	2.0	1.3	1.3	1.0	1.2	9.0	4.4	2.3	1.2	1.5	1.2	0.9	1.1	1.0	1.0	0.60
YHR048W	2.5	1.4	1.4	1.7	1.0	0.8	0.8	1.9	4.5	2.7	2.0	0.9	1.1	1.7	0.9	1.4	0.7	0.9	0.26
YKL221W	1.3	0.7	2.0	1.0	1.0	0.9	1.3	1.2	7.3	2.7	1.9	0.7	1.6	1.4	1.1	1.3	0.8	0.9	0.27
YLR092W	5.0	5.6	1.4	0.6	1.3	1.0	1.3	1.5	12.7	5.8	3.1	1.0	1.8	1.4	0.9	1.2	1.0	1.1	0.24
YML116W	4.1	1.3	1.5	1.4	1.2	0.9	1.4	2.2	1.4	3.1	4.3	0.5	0.8	2.0	1.9	1.0	1.0	1.0	0.94
YBR291C	2.0	0.9	1.0	1.5	0.9	1.1	0.9	2.2	0.9	1.0	1.1	0.9	1.0	1.7	0.5	1.5	0.9	1.3	1.19
YCL069W	0.9	4.5	0.9	0.8	0.9		1.4	1.3	1.2	6.9	1.0	0.9	0.8	1.3	1.4	0.9	1.0	1.0	0.25
YJR095W	1.2	20.5	1.9	6.7	1.2	1.5	2.0	0.9	0.5	6.3	0.6	0.7	0.8	1.3	0.8	0.8	1.3	0.9	0.23
YKL188C	1.3	0.7	1.9	2.4	1.0	0.8	1.1	0.7	2.5	2.8	1.1	1.2	1.2	2.1	1.4	2.7	1.1	1.5	0.27
YKL217W	1.8	2.4	1.0	2.1	1.1	1.2	1.6	1.1	0.9	4.1	1.6	0.8	1.2	1.2	2.2	3.0	1.7	3.3	0.29
YKR105C	0.8	0.9	0.9	1.5	1.0	1.2	1.0	1.3	1.0	5.2	0.0	0.8	2.5	1.2	1.5	0.7	0.8	1.0	0.26
YOL158C	0.7	4.0	2.4	0.9	1.2	2.0	1.6	0.7	1.7	6.1	0.7	0.9	1.4	1.0	0.9	1.2	1.4	1.7	1.30
YPL224C	1.0	2.2	1.3	2.5	0.6	1.3	2.2	1.3	3.2	4.2	0.8	1.1	1.3	1.4	1.0	2.5	1.3	1.9	0.64
YPR201W	33.2	0.9	1.1	1.0	1.2	1.9	0.8	0.9	8.3	5.6	2.2	0.7	1.1	1.8	0.8	0.9	0.8	0.9	0.29
YAL067C	2.7	12.1	1.5	1.4	0.7	1.2	0.8	1.1	7.6	2.9	1.2	1.0	1.1	1.3	2.4	1.6	1.0	1.0	0.33
YDL149W	0.8	2.0	1.2	1.6	1.5	1.0	0.7	1.2	3.2	2.0	1.2	0.7	1.5	1.2	1.8	1.4	0.8	1.0	0.33
YJL094C	1.0	1.7	1.3	2.0	1.4	1.3	1.7	0.8	5.4	2.9	1.1	1.2	2.6	1.0	1.0	1.8	2.1	2.0	0.84
YLL061W	3.6	2.8	9.2	0.4	0.8	0.8	0.9	1.4	3.7	5.5	1.7	0.7	0.9	1.3	1.4	1.0	0.6	0.7	0.33
YPL274W	0.8	4.2	3.8	0.8	0.6	1.1	0.7	0.9	4.1	3.6	2.0	0.5	0.6	0.9	1.5	1.1	0.7	0.6	0.41
YBR241C	0.9	9.3	2.6	0.9	0.9	1.5	1.4	0.7	29.8	2.2	1.4	1.4	1.4	0.9	1.6	0.7	1.0	1.2	1.25
YDL206W	0.9	1.7	1.8	1.4	1.1	5.7	2.0	1.1	1.6	1.5	0.6	1.0	1.3	1.0	1.1	3.1	1.0	1.1	0.35
YDR040C	0.7	1.4	3.7	0.8	1.0	1.7	0.7	0.8	2.0	1.2	0.8	0.9	1.8	0.9	0.8	1.4	1.4	1.6	1.25
YFR045W	1.1	1.6	1.1	1.1	1.0	1.0	0.6	1.0	2.2	1.0	1.4	1.0	1.1	1.0	1.1	0.6	0.9	0.8	0.84
YIL170W	1.1	1.0	2.5	2.2	0.9	8.8	0.5	1.2	5.7	3.2	1.7	0.7	1.9	1.1	2.3	1.8	1.6	1.5	0.48
YKL192C	1.1	1.0	3.7	1.1	1.1	1.8	1.1	0.9	3.5	1.6	1.1	1.2	1.7	1.5	1.2	2.1	1.0	0.8	1.57
YKL209C	1.0	1.0	1.3	0.8	1.2	3.3	0.9	1.4	2.4	1.6	0.8	0.9	1.4	1.1	1.0	1.1	1.1	1.0	0.30
YKR106W	1.3	0.8	2.1	1.4	1.2	1.6	0.9	1.3	10.5	7.4	1.8	0.8	1.4	1.7		2.8	0.9	0.8	0.16
YMR056C	1.1	1.3	1.7	1.0	1.1	0.9	1.4	1.2	1.8	1.1	1.6	0.9	0.9	1.1	0.7	2.4	1.0	1.1	0.72
YPL147W	1.0	0.8	2.3	1.2	1.2	1.1	1.0	0.9	2.4	2.4	1.3	0.9	1.5	1.0	2.4	2.5	1.5	3.6	0.33

YIL166C	1.9	12.5	2.1	1.2	1.0	1.9		1.3	2.5	2.9	1.8	0.9	1.5	1.1	1.3	0.7	1.2	0.9	0.26
YMR058W	0.3	5.1	2.1	0.3	0.8	2.6	1.8	0.8	0.2	1.4	0.8	0.8	0.4	0.3	0.5	0.4	0.6	0.5	1.66
YNL142W	0.7	2.4	2.5	0.8	1.3	0.9	1.1	0.8	0.9	0.6	0.9	1.2	0.9	0.8	0.3	1.0	1.0	0.9	0.44
YDL210W	1.2	2.2	2.7	1.1	0.9	1.3	0.8	1.1	1.2	1.4	0.6	0.8	1.2	1.1	1.9	0.9	1.1	0.9	0.20
YCL025C	1.1	4.6	2.5	1.7	0.9	0.9	0.7	0.7	0.3	0.3	1.0	1.1	0.5	0.7	0.8	0.6	0.6	0.6	1.98
YJL212C	0.8	3.2	3.1	0.5	1.2	1.1	0.7	0.7	1.1	1.3	0.9	0.4	1.0	0.8	0.3	0.5	0.6	0.5	0.59
YBR132C	0.9	1.9	2.4	1.8	0.8	1.2	1.1	0.8	0.8	1.1	1.9	1.0	1.4	1.1	1.5	1.3	1.1	1.3	0.43
YBL030C	1.0	0.9	4.5	0.9	0.7	1.1	0.9	0.8	0.4	0.9	1.1	0.9	0.5	0.8	1.8	1.0	1.0	1.1	3.12
YCR024C-A	0.8	0.9	3.2		0.9	1.2	0.8	0.8	0.2	0.7	1.5	1.0	0.5	0.8	1.3	1.5	0.9	1.4	4.02
YDR342C	2.8	1.1	12.2	5.7	1.6	1.1	0.8	1.2	0.2	2.2	2.9	1.0	0.6	0.9	0.5	2.4	1.0	2.2	5.23
YDR343C	1.2	1.0	20.6	4.6	1.3	1.3	0.7	1.2	0.3	2.1	2.3	1.0	0.8	0.8	0.5	2.8	1.1	2.3	5.81
YEL027W	1.2	0.6	3.4	1.1	1.0	1.1	0.8	0.9	0.9	1.1	0.9	0.9	0.7	1.4	1.5	1.6	1.0	1.4	4.75
YHR094C	0.7	1.2	5.3	1.6	1.1	1.6	0.8	1.2	0.3	1.2	0.6	0.9	0.7	0.6	2.7	0.9	1.4	1.4	4.82
YHR175W	0.8	2.0	2.4	1.5	0.9	1.0	1.6	0.9	0.6	2.0	1.1	1.4	1.2	0.7	1.3	2.3	1.3	1.2	1.01
YIL056W	1.1	0.9	6.2	1.4	1.2	1.0	0.6	0.7	1.2	1.6	0.7	1.0	1.5	1.0	0.5	0.9	1.5	1.2	0.71
YMR203W	0.8	0.7	3.0	1.4	0.6	1.1	0.8	0.7	0.7	1.2	2.3	0.7	1.1	0.7	1.2	0.9	0.8	0.7	1.62
YBL099W	0.8	0.9	3.1	1.4	1.0	0.9	0.9	0.8	0.9	0.7	2.1	1.0	0.9	0.6	1.0	0.9	0.7	1.2	3.49
YBR127C	0.8	0.7	2.2	1.1	1.4	1.1	0.9	1.1	0.6	1.3	1.1	0.9	0.9	0.6	1.3	1.4	0.8	1.0	4.59
YDR038C	0.6	1.3	3.1	0.9	0.9	1.8	0.7	0.9	1.4	0.9	0.9	0.7	2.0	0.8	0.8	1.4	1.3	1.5	1.32
YDR039C	0.6	1.6	3.2	0.9	1.3	1.1	0.8	0.6	1.8	1.0	0.9	0.8	1.8	0.9	1.2	1.4	1.1	1.6	1.39
YDR298C	1.3	1.2	2.6	1.3	1.3	1.2	1.0	1.2	1.0	1.6	1.2	1.1	1.2	1.5	0.8	2.0	1.1	1.6	2.69
YDR345C	0.8	0.9	5.6	2.6	1.3	1.2	1.1	1.2	0.2	1.1	1.5	1.4	1.2	0.8	0.8	1.0	1.3	1.8	5.65
YEL063C	0.7	0.8	2.4	1.3	1.2	1.3	0.7	0.6	0.8	1.7	0.8	1.1	1.1	0.8	1.3	1.0	0.7	0.7	1.12
YFL011W	1.2	0.7	3.7	3.3	1.3	1.0	0.8	0.8	0.3	1.6	2.1	0.9	0.8	0.8	1.7	1.2	0.8	1.0	1.25
YGR082W	1.0	0.9	2.2	1.0	0.9	1.1	0.9	0.8	0.6	0.9	1.3	0.8	0.5	0.9	1.2	1.3	0.9	0.8	1.47
YGR191W	0.8	0.7	1.6	1.5	0.8	1.1	0.7	0.7	0.1	0.7	1.6	0.7	1.0	0.7	1.5	0.7	0.8	0.8	1.58
YGR260W	0.6	0.7	3.4	0.8	0.8	0.9	0.9	0.5	0.3	0.4	1.3	0.6	0.5	0.7	1.8	1.0	0.9	0.9	1.71
YHR026W	0.9	1.0	1.9	1.0	1.1	1.3	0.9	1.6	1.1	0.9	1.4	0.7	0.7	1.3	2.4	1.2	0.9	1.1	3.40
YJR077C	1.1	1.1	2.0	1.6	0.9	0.9	0.7	0.8	0.4	0.7	1.6	1.0	0.9	0.7	1.5	0.7	1.0	0.8	1.79
YJR121W	0.9	1.1	3.3	1.0	0.8	1.5	1.0	0.7	0.8	1.3	0.9	0.8	1.0	0.7	0.9	1.2	1.1	1.4	3.99
YLR081W	1.3	0.8	2.8	3.6	1.0	0.9	0.7	0.9	0.1	2.2	2.6	1.0	0.6	1.0	0.7	1.2	0.7	0.9	1.46

YMR011W	1.3	1.0	9.4	5.5	0.9	0.6	0.8	1.1	0.0	0.7	1.5	0.8	0.4	0.6	0.6	1.2	1.3	1.6	4.95
YOL156W	1.1	0.7	2.5	1.1	1.2	1.2	1.0	1.0	2.3	2.1	1.1	0.9	1.7	0.9	1.9	0.9	0.9	0.9	0.53
YPL036W	0.5	0.8	2.8	0.9	1.3	0.7	0.3	0.5	0.1	0.3	0.8	0.5	0.3	0.6	1.0	0.7	0.4	0.5	3.66
YGR096W	1.5	1.0	1.1	4.6	1.2	1.7	0.9	1.0	0.8	0.8	0.8	0.8	1.1	1.2	0.9	0.8	0.8	1.0	0.49
YIL006W	1.0	1.1	1.4	2.9	0.8	0.3	0.8	0.6	0.9	1.1	1.0	0.9	0.8	1.0	1.5	1.7	0.8	0.9	0.28
YKL016C	1.5	1.3	0.7	1.7	1.5	0.8	1.5	1.6	1.3	1.8	1.3	1.0	1.3	1.6	0.7	1.8	1.0	1.7	2.08
YKR067W	0.8	2.6	1.5	2.5	1.3	1.8	2.0	0.8	1.6	2.3	1.3	1.0	1.3	1.3	1.3	2.0	0.8	1.0	0.58
YMR162C	0.8	1.1	1.1	2.0	0.9	1.0	0.8	0.8	0.7	1.0	1.7	0.7	0.9	1.0	1.0	0.8	0.8	1.1	0.32
YOR348C	1.1	0.7	1.2	2.0	0.9	0.7	0.8	0.8	0.5	0.4	1.1	0.7	1.1	1.2	1.6	1.7	0.9	0.9	0.18
YPR192W	0.9	1.1	0.9	5.0	1.2	0.9	0.9	0.6	0.7	1.3	0.7	0.5	1.1	0.7	1.7	2.6	1.6	0.9	0.28
YPR194C	2.2	1.4	0.5	2.9	1.3	1.5	0.7	1.0	0.5	0.6	0.7	0.7	1.0	1.0	0.4	0.8	1.0	0.9	0.27
YDR086C	1.3	1.0	1.2	1.4	1.0	0.8	2.0	1.9	0.6	0.8	1.1	0.7	0.7	1.5	2.1	1.3	1.4	1.9	2.60
YGR224W	0.9	1.2	1.2	1.2	1.4	0.8	0.4	0.6	0.9	0.9	0.8	0.6	0.8	0.9	1.1	1.0	2.8	1.3	0.27
YDR387C	0.8	0.9	1.2	2.2	0.9	1.2	1.3	0.7	1.4	2.0	2.0	0.9	1.3	0.9	1.4	2.7	1.2	1.1	0.86
YFL050C	0.7	1.0	1.1	2.2	1.0	0.9	0.8	0.9	0.5	1.6	1.2	0.9	1.2	1.0	1.4	2.3	0.8	1.0	0.36
YBR298C	1.1	1.0	1.6	2.3	1.4	0.4	1.7	0.5	0.3	1.1	1.5	1.1	0.8	0.9	0.2	2.1	0.9	0.8	0.88
YLR295C	1.4	1.1	1.1	1.7	2.2	1.1	1.1	1.2	1.4	1.2	1.3	0.5	0.8	1.2	0.5	2.4	0.9	1.5	1.07
YNR072W	1.1	1.5	0.5	0.7	1.0	0.9	1.5	0.9	0.7	1.8	1.4	1.0	1.5	1.0	1.8	2.1	1.3	1.0	0.26
YOR316C	0.7	2.5	1.5	1.5	1.0	0.9	1.4	0.8	1.6	2.0	2.4	1.1	1.6	1.0	1.5	2.2	0.8	1.0	0.93
YOR328W	1.0	1.0		1.0	1.0	2.9					1.1	1.8		0.8	3.3	2.1			0.19
YPL134C	1.5	1.0	1.6	1.6	1.4	1.2	1.2	1.3	0.6	0.8	1.7	0.8	1.0	1.4	1.1	3.3	1.3	1.3	0.70

酵母遺伝子
表6 ストレスタンパク質遺伝子
化学物質存在下の発現mRNA/不存在下の発現mRNA

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	強度
YBR072W	18.5	17.4	18.4	10.5	1.2	32.2	6.6	2.1	29.4	43.4	6.3	16.3	38.5	5.8	4.9	23.1	1.8	2.2	0.59
YFL014W	3.4	5.1	5.7	11.0	1.0	9.3	5.5	3.4	13.1	5.8	5.0	4.3	15.2	7.3	6.3	14.2	1.5	8.8	2.14
YLL060C	12.5	4.2	2.3	2.6	0.9	1.4	2.0	5.8	13.0	23.2	14.1	1.1	1.8	10.6	1.5	3.6	1.9	2.3	0.57
YAL005C	0.6	1.6	7.0	0.9	1.2	1.6	1.2	0.9	3.9	1.8	1.0	1.2	5.0	0.4	1.6	0.7	0.8	0.5	5.23
YBL075C	1.3	4.3	3.1	1.6	1.1	0.8	1.3	0.8	60.3	6.7	1.6	1.1	8.0	1.1	2.6	2.2	1.2	0.7	1.17
YBR169C	1.0	2.1	3.9	1.9	0.8	4.9	2.5	0.9	7.0	4.3	2.2	1.7	7.2	1.1	1.6	2.4	1.3	1.6	1.10
YCL035C	2.0	2.3	1.5	1.7	1.5	5.1	2.7	1.4	1.9	2.3	2.1	1.5	2.8	2.5	1.9	5.5	2.6	4.2	1.74
YCR060W		0.7	0.9		0.8	3.3	2.4	1.2	0.7	1.1	1.2	1.7	8.6	1.7		3.3	1.2	1.7	1.04
YDR155C	1.1	1.5	3.2	1.8	0.8	1.5	1.2	1.4	1.3	1.3	3.8	1.4	3.3	1.0	2.5	1.6	1.2	2.5	4.99
YDR258C	1.6	2.3	2.8	1.4	1.3	2.4	3.9	1.9	4.9	13.3	1.7	1.8	5.2	1.5	0.6	1.0	1.3	1.3	0.87
YER103W	0.7	2.1	5.2	2.1	1.1	1.7	1.0	0.9	20.3	9.0	1.8	1.9	9.0	0.9	3.2	1.2	1.4	0.6	2.10
YKL210W	0.5	1.7	2.7	0.7	0.8	1.4	1.0	0.9	3.5	2.9	1.4	1.3	2.9	0.8	1.0	0.9	0.7	1.1	2.29
YLL024C	0.5	1.6	5.3	0.8	0.7	1.0	1.1	0.7	2.8	2.4	1.6	1.0	4.8	0.4	1.3	0.5	0.5	0.6	5.12
YLL026W	1.8	2.9	7.7	1.7	0.9	1.9	2.9	1.4	11.4	6.6	1.7	1.9	8.1	0.8	0.9	1.6	1.7	2.5	2.56
YNL160W	2.1	3.7	10.6	2.0	1.3	5.8	2.4	1.2	3.5	2.7	5.4	1.4	6.0	1.3	0.7	4.0	1.0	1.0	1.77
YNL241C	1.3	2.5	4.3	1.0	0.8	0.9	3.2	0.9	3.4	7.4	3.0	2.0	4.9	1.1	7.0	2.8	1.0	1.0	0.68
YOR027W	0.7	2.4	4.4	0.8	1.0	1.6	1.3	0.9	3.5	4.0	1.3	1.3	5.1	0.8	1.4	0.6	0.9	0.8	1.52
YPL240C	0.7	1.4	2.4	0.9	1.3	1.2	1.4	1.2	3.5	2.6	1.0	0.8	2.9	0.7	1.2	0.7	0.8	1.0	4.83
YDR293C	0.9	0.9	1.2	1.4	0.6	0.9	0.9	0.6	1.2	1.2	1.1	0.9	2.3	0.8	1.7	1.6	1.4	1.3	1.12
YDR436W	0.9	0.9	1.1	1.4	0.7	1.1	1.2	0.9	3.5	1.1	2.0	0.9	2.7	1.2	0.8	1.4	0.9	1.2	0.53
YDR519W	1.3	3.2	1.7	1.6	0.7	1.3	1.9	1.4	0.5	1.2	1.2	1.7	2.5	1.3	2.0	1.5	1.8	2.4	2.01
YEL030W	0.7	0.9	1.9	1.1	0.4	0.6	0.9	0.7	2.3	2.5	1.7	0.9	2.7	0.7	0.8	0.8	0.9	0.6	1.28
YER125W	0.6	1.1	1.5	0.9	1.4	0.7	0.8	0.7	0.6	1.2	1.0	0.7	1.9	0.7	0.8	1.0	1.0	1.0	1.48
YFL016C	0.8	1.0	1.6	0.9	1.3	1.3	1.4	0.7	6.4	2.9	1.2	1.0	2.8	0.8	0.8	0.6	1.2	0.9	1.25
YFR052W	1.1	1.6	1.3	1.5	1.4	3.2	2.2	1.5	3.7	3.0	0.9	1.8	3.8	3.3	1.4	2.7	1.2	1.9	1.62
YHR057C	1.1	1.2	0.7	0.9	1.3	1.3	1.3	1.0	2.6	1.2	1.6	1.1	1.9	1.9	1.2	2.2	1.6	1.3	1.07
YIR037W	1.4	2.2	2.0	2.3	0.6	2.7	1.8	1.3	6.2	3.8	3.0	1.3	2.4	2.3	1.0	4.0	1.7	2.9	1.97
YIR038C	1.3	3.5	4.6	2.0	0.7	2.5	2.0	1.3	4.6	4.5	3.4	1.1	2.5	2.5	1.2	6.0	2.8	2.0	1.11

YJR045C	0.5	1.9	3.9		0.5	1.2	1.0	0.8	3.2	3.0	1.4	1.0	2.3	0.5	2.3	0.8	0.7	0.9	3.78
YLL039C	1.1	1.0	1.7	1.2	0.9	1.5	1.1	1.1	3.4	1.5	1.1	1.0	2.2	1.4	3.0	1.1	1.6	2.1	3.60
YLR259C	0.7	1.0	3.1	1.6	1.1	0.9	1.8	0.8	1.8	2.6	3.0	0.7	2.5	0.8	2.1	1.3	0.8	1.0	2.09
YML070W	0.9	1.7	2.5	1.9	1.4	2.2	3.1	1.3	4.5	3.9	1.5	1.3	3.3	1.3	0.9	2.6	1.2	1.3	1.03
YPL106C	0.6	1.7	2.4	1.1	1.2	1.6	1.1	1.2	4.9	1.8	1.3	1.1	3.1	0.9	1.1	0.5	0.5	0.5	3.34
YPR026W	0.9	1.2	5.0	1.3	0.8		1.3	1.0	0.9	3.1	1.6	1.2	2.3	1.5	3.1	2.5	0.9	1.3	0.26
YDR077W	1.2	1.0	3.5	2.1	0.8	1.0	0.7	0.8	0.7	0.7	6.8	0.8	1.0	0.3	6.1	1.0	1.4	1.1	4.77
YKL163W	1.1	1.4	3.4	1.9	0.6	1.1	0.9	0.8	0.7	1.6	1.3	0.9	1.5	0.5	16.8	3.0	0.8	1.0	2.01
YLR109W	0.8	2.9	6.0	0.9	1.3	2.1	2.6	0.9	2.4	2.7	1.5	1.6	3.2	2.3	3.9	1.8	1.1	1.2	3.86
YOR208W	1.3	1.0	1.2	2.9	1.4	1.8	1.1	1.0	1.5	2.0	1.2	1.2	1.5	1.3	4.4	1.9	1.6	1.6	0.56
YDR098C	0.8	1.4	1.0	0.8	1.5	1.1	1.5	1.2	3.7	1.5	1.4	1.3	1.2	1.5	2.2	0.8	1.0	1.2	1.59
YHR030C	2.1	0.8	0.6	2.9	1.8	0.9	1.8	1.5	0.6	2.5	1.5	0.7	1.0	1.1	3.4	1.4	2.0	1.8	1.05
YJL159W	1.0	1.3	2.8	1.1	1.0	1.8	0.9	0.8	0.5	1.2	1.2	1.0	1.7	0.6	5.3	1.0	1.4	0.9	2.45
YMR173W	1.5	3.6	3.0	0.9	1.1	5.0	2.4	2.3	2.7	8.2	3.2	1.4	2.0	2.3	2.5	1.2	1.9	1.8	1.37
YCR021C	5.2	1.4	4.2	8.6	0.9	2.2	0.9	0.8	2.2	1.0	0.6	0.5	0.9	1.6	0.5	0.6	0.7	0.8	1.36
YDL022W	0.9	2.6	6.9	1.5	0.7	2.1	1.5	0.8	1.2	1.8	2.8	1.2	1.5	0.8	0.9	1.1	1.0	1.4	1.79
YDR033W	1.1	1.3	4.6	1.5	1.1	6.7	0.8	1.0	0.3	1.0	0.7	1.0	0.7	1.0	0.8	1.0	0.7	1.0	5.78
YFL020C	1.0	1.1	1.9	1.2	1.1	2.0	1.4	0.7	1.3	1.4	1.2	1.3	1.4	1.0	1.4	0.9	1.5	0.9	0.70
YGL073W	1.0	2.1	0.9	1.0	1.7	1.9	1.3	0.8	1.9	2.4	0.8	0.8	1.5	1.2	0.9	1.1	2.5	1.2	0.66
YIL033C	0.8	1.3	3.3	1.3	0.7	2.0	1.1	0.7	2.4	1.3	1.8	1.1	2.5	0.7	1.0	2.0	1.0	1.2	1.18
YMR021C	1.0	0.7	0.9	1.1	1.6	2.2	2.5	1.3	0.6	1.3	0.9	0.8	1.4	1.3	1.0	2.0	3.3	3.4	1.14
YBR126C	0.8	1.9	5.6	1.2	0.7	2.9	2.3	0.6	1.7		1.1	1.3	2.1	0.7	1.0	1.7	1.5	1.3	1.96
YBR067C	1.6	2.5	2.8	0.9	1.1	1.1	1.1	1.1	1.7	1.0	3.1	1.0	0.9	0.7	3.3	2.5	0.5	0.4	1.76
YDR513W	2.2	2.5	2.3	2.6	0.9	2.1	1.6	1.6	4.6	3.1	2.0	0.9	1.8	2.0	1.3	3.8	1.3	3.2	3.10
YGR088W	1.3	1.2	7.7	2.4	1.0	1.3	0.8	0.8	1.5	3.2	3.9	1.1	1.2	1.3	0.7	5.6	0.9	2.0	0.75
YHR104W	1.0	4.1	15.7	1.9	1.1	1.2	1.5	1.1	4.8	2.3	2.6	1.0	1.2	1.5	1.6	1.3	1.9	1.9	1.57
YKL161C	4.2	0.8	0.9	2.2	1.4	2.0	2.0	1.9	1.4	1.7	3.1	0.9	1.3	1.4	1.3	1.1	1.4	1.9	0.45
YPL223C	4.8	20.0	1.2	5.1	0.9	1.5	1.1	1.2	29.4	16.5	1.8	0.9	2.3	2.5	1.5	19.0	1.0	1.3	0.31
YBR054W	1.9	1.8	5.4	1.7	0.8	1.1	0.6	2.1	0.4	1.2	1.8	0.7	1.5	1.0	0.6	0.4	0.7	0.7	3.02
YAL015C	1.2	1.1	1.7	1.9	1.1	0.7	1.2	1.1	4.0	2.7	1.4	1.0	1.2	1.6	0.7	2.0	1.1	1.2	0.61
YDL025C	1.7	5.0	3.5	1.5	0.6	0.6	1.0	1.1	3.6	4.5	1.5	0.9	1.2	1.7	1.0	1.7	1.0	1.4	0.56

酵母遺伝子

表7 代謝系タンパク質遺伝子

化学物質存在下の発現mRNA/不存在下の発現mRNA

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	強度
YCR107W	12.0	2.6	1.8	1.6	0.7	1.5	1.5	15.6	196.6	34.0	23.0	0.9	4.0	8.3	4.8	3.1	1.3	1.1	0.59
YDL243C	14.4	2.7	2.4	1.0	1.1	2.2	1.6	11.8	64.2	29.6	19.6	1.1	4.1	12.0	4.2	3.0	1.8	1.5	0.76
YFL014W	3.4	7.2	5.7	11.0	1.0	9.3	5.5	3.4	13.1	5.8	5.0	4.3	15.2	7.3	6.3	14.2	1.5	8.8	2.14
YFL056C	19.0	2.3	2.3	1.5	0.9	0.6	1.4	18.5	162.3	31.3	68.3	1.0	4.7	7.8	5.0	3.4	1.0	1.1	0.55
YFL057C	20.9	5.8	1.5	1.8	0.9	1.2	1.8	18.0	51.8	46.1	27.7	1.0	4.1	23.4	3.1	3.9	1.6	1.3	0.71
YJR155W	10.6	3.7	1.4	2.5	0.7	1.4	1.7	10.6	38.2	18.8	15.4	1.0	5.7	9.4	2.6	5.6	1.3	1.4	0.64
YNL331C	8.6	3.6	1.3	1.0	1.6	1.8	1.9	13.1	42.6	36.3	21.8	0.9	3.1	7.5	2.3	4.0	1.7	1.3	0.58
YNL332W	1.1	1.5	1.1	2.0	1.6	1.1	2.1	1.5	3.3	2.1	2.6	1.2	2.1	3.0	5.4	2.2	1.0	1.0	0.24
YOL165C	10.1	4.5	1.8	0.9	0.9	1.7	1.4	17.8	46.9	23.3	17.6	0.8	3.7	9.1	3.0	1.8	1.6	1.0	0.69
YPR167C	5.3	5.8	1.9	0.8	1.4	2.6	1.2	5.5	76.6	9.0	1.9	1.3	1.9	4.2	0.9	0.9	1.7	1.4	0.54
YBR256C	3.0	1.4	0.6	1.3	1.6	2.0	2.1	2.3	18.1	6.8	3.2	1.7	3.5	5.6	1.6	3.0	2.6	3.3	1.97
YBR296C	7.0	11.2	2.2	2.5	1.4	1.4	0.2	1.1	0.4	1.8	1.5	1.6	2.0	2.3	1.7	0.3	3.8	4.0	0.54
YDL021W	4.8	1.7	2.4	3.7	1.7	6.5	5.9	2.7	2.5	7.4	4.7	2.4	5.3	3.7	0.7	7.3	1.9	3.2	0.47
YFL061W	1.5	1.4	2.1	3.0	1.0	0.5	1.2	1.2	3.2	9.9	1.1	0.9	1.2	6.0	2.1	1.0	1.2	0.9	0.31
YGR043C	2.5	4.7	3.2	7.9	0.9	16.3	6.5	2.6	10.9	8.4	3.6	3.3	6.9	4.1	3.0	13.7	1.6	4.8	0.66
YHR112C	1.8	3.1	0.7	1.4	1.3	2.9	3.4	1.7	10.5	4.4	1.5	1.9	3.9	2.4	2.0	2.7	1.6	1.8	0.55
YIR030C	1.4	1.0	0.9	1.3	0.9	0.5	1.2	1.4	5.4	2.1	1.4	0.9	1.3	2.9	0.7	0.8	0.9	1.0	0.42
YJR010W	9.1	7.3	4.9	0.8	1.1	2.5	1.4	3.1	30.0	11.1	2.9	1.4	3.2	5.4	1.7	1.7	1.2	1.0	0.56
YKL001C	6.8	21.4	5.6	1.8	0.8	0.9	1.1	3.4	10.3	3.4	2.6	2.1	1.6	6.2	1.1	1.8	2.7	1.7	0.91
YKR097W	1.3	2.4	1.3	3.3	1.1	1.7	3.7	2.5	1.9	3.3	0.8	1.8	17.5	2.1	2.5	2.2	1.1	1.5	0.16
YLR303W	7.3	9.8	12.1	1.1	1.1	3.0	3.6	5.3	18.6	5.6	9.8	4.3	9.9	3.8	5.8	3.4	1.5	1.4	1.42
YNL274C	1.4	18.7	2.6	1.9	0.7	4.2	2.0	2.3	6.3	5.3	4.0	1.1	2.3	3.3	2.5	6.4	1.4	2.6	0.85
YOL151W	6.7	3.8	9.1	1.3	1.3	8.4	4.4	6.7	22.8	17.0	9.0	4.6	16.9	4.0	2.8	3.7	4.0	5.6	1.12
YOR226C	1.3	2.2	1.7	1.1	1.3	1.2	1.2	1.2	1.3	5.9	1.5	0.6	0.9	2.7	1.0	0.7	1.0	0.7	0.58
YJL153C	1.3	1.7	1.7	17.6	0.7	0.8	2.3	1.3	3.9	2.5	0.7	10.2	38.0	1.4	37.0	1.0	6.5	1.8	0.27
YOR153W	1.6	0.9	5.1	1.1	1.0	7.4	2.6	0.5	3.2	1.2	1.0	4.0	11.8	0.3	3.6	1.6	2.5	3.1	1.91
YPL088W	3.3	1.3	0.6	2.5	1.5	7.1	3.7	1.9	0.6	2.8	1.1	3.6	4.8	1.6	3.2	4.3	9.1	8.3	0.69
YDL124W	2.1	8.5	5.7	1.7	0.7	3.4	2.9	2.1	3.3	5.3	3.4	2.4	6.0	1.6	3.4	3.6	2.2	2.6	2.43

YDL174C	0.9	1.8	0.9	1.3	0.5	1.7	3.6	0.8	0.5	1.7	0.9	2.8	5.9	1.1	0.6	5.1	2.2	4.0	0.63
YGL156W	1.3	2.5	1.8	2.2	1.4	2.1	2.1	1.4	5.6	2.4	2.1	2.6	6.0	1.6	3.0	4.1	1.4	1.9	0.29
YGR157W	1.0	0.9	5.2	0.8	1.2	1.0	0.8	0.7	3.3	2.0	1.0	1.8	4.8	0.7	4.6	1.0	0.8	1.3	2.10
YHR043C	1.3	1.8	1.2	1.7	0.9	2.2	2.9	3.0	1.2	1.0	1.6	2.2	2.7	1.3	2.1	2.2	1.4	1.7	1.38
YHR044C	1.3	1.3	1.7	1.5	1.2	3.3	2.6	2.0	1.1	1.1	1.7	2.3	4.3	1.3	1.5	2.4	1.3	1.4	1.12
YJR073C	1.1	2.4	2.7	2.7	0.6	2.2	2.9	1.0	6.8	2.8	2.8	4.1	10.0	2.3	28.9	3.7	2.9	2.6	0.99
YOR303W	1.1	2.2	0.5	1.0	1.2	1.8	1.2	1.6	0.9	5.2	0.9	1.9	3.3	1.6	4.1	1.2	1.2	0.8	1.47
YBR294W	6.3	12.0	0.9	2.6	1.4	1.2	1.1	1.0	5.2	5.2	1.2	1.0	3.1	1.3	1.0	0.9	1.0	0.9	0.18
YCL043C	0.6	3.7	2.5	0.7	0.9	1.3	1.0	0.8	1.6	1.2	1.7	1.5	4.1	0.6	5.7	0.8	0.9	1.0	2.37
YCL050C	1.0	1.1	1.9	0.7	1.4	1.2	1.2	1.2	3.0	2.9	1.3	1.2	2.8	1.2	0.8	0.7	1.0	1.0	2.20
YCR012W	1.1	1.5	5.1	1.2	1.1	2.5	1.4	0.8	1.4	1.5	1.8	1.2	4.1	0.9	1.4	1.4	0.8	1.3	4.48
YDR158W	1.1	0.5	1.8	0.8	1.3	1.0	0.8	1.2	1.1	1.7	1.6	1.0	2.6	0.9	1.0	0.6	1.0	0.9	3.54
YDR204W	0.9	2.3	3.0	1.4	1.0	2.2	2.2	1.1	5.7	3.7	2.2	1.2	2.9	1.1	0.6	2.8	1.1	1.7	0.62
YDR313C	1.2	1.2	1.2	1.4	1.3	1.4	1.5	1.2	4.7	2.6	1.5	1.2	2.3	1.3	0.8	2.9	1.1	1.3	0.84
YDR368W	2.0	2.2	2.2	1.8	1.0	3.0	2.1	1.7	3.8	3.8	1.8	1.4	2.6	2.0	1.2	2.3	1.1	2.0	1.70
YER091C	3.6	3.9	30.7	1.3	0.9	2.3	2.1	0.9	5.8	1.4	3.2	2.0	5.4	1.2	10.2	2.7	1.2	1.0	1.23
YFR053C	1.7	1.4	3.0	2.2	0.9	3.2	2.1	2.8	0.6	1.1	1.5	1.7	3.0	0.6	0.6	3.0	1.4	2.2	4.17
YGL062W	0.6	1.3	1.1	0.6	0.9	1.0	1.3	0.8	1.6	2.5	0.7	1.6	4.5	1.2	2.7	1.5	1.1	0.9	0.77
YGL157W	0.7	0.9	1.8	0.9	1.5	5.4	3.3	1.4	0.6	1.8	1.4	1.5	4.8	1.2	5.1	1.7	1.8	2.3	1.69
YGL184C	4.6	15.9	57.4	1.3	1.1	1.0	1.2	1.9	37.9	66.8	1.7	2.6	7.4	1.4	0.4	1.5	1.0	0.9	0.16
YGR032W	1.0	1.4	1.0	1.3	0.7	1.9	0.8	0.6	0.5	0.7	1.5	1.5	3.9	1.1	5.4	1.5	3.2	2.8	1.18
YGR124W	0.5	0.6	1.7	0.7	1.2	1.1	0.7	1.0	2.2	1.3	1.1	1.1	2.3	0.5	1.5	0.3	0.7	0.6	3.56
YGR192C	1.4	1.0	3.8	1.0	1.1	1.7	1.7	1.1	0.9	1.3	2.3	2.2	3.4	1.0	1.9	1.1	1.1	1.3	7.49
YGR244C	1.0	1.2	1.6	1.6	0.8	2.6	3.9	1.8	1.4	1.1	1.8	1.9	2.6	1.2	2.0	2.6	1.9	3.1	1.12
YGR254W	1.2	1.3	3.8	1.3	1.2	1.9	1.5	1.4	0.8	1.2	1.3	1.7	3.1	0.6	2.4	1.4	1.3	1.2	7.01
YHR018C	1.0	1.0	1.5	1.4	1.7	1.1	0.8	1.0	1.4	4.4	1.4	1.4	3.3	1.0	4.4	1.0	1.9	1.2	1.21
YIL160C	0.8	2.4	2.3	3.5	1.0	1.6	1.1	1.2	3.2	3.8	2.4	1.0	2.3	1.5	5.6	8.8	2.4	3.0	0.27
YIR017C	3.5	8.6	2.5	1.9	0.8	1.9	1.5	1.2	5.2	3.4	4.2	1.2	3.4	1.9	2.3	3.0	1.5	1.3	0.36
YJL052W	1.5	0.9	4.0	1.8	0.7	2.4	2.1	1.5	1.6	2.0	4.3	2.4	5.6	1.3	2.3	2.3	1.2	1.9	6.19
YJR009C	1.1	1.7	5.6	1.0	1.2	1.6	1.6	1.1	1.1	1.3	1.1	1.5	2.7	1.0	2.1	1.5	1.1	1.3	5.86
YJR130C	1.1	0.6	0.8	0.9	1.4	2.0	1.3	1.3	5.2	3.8	1.7	1.0	2.9	1.1	0.9	1.5	1.1	1.3	0.62

YJR149W	1.0	1.8	1.4	2.3	0.8	1.0	1.7	1.0	1.4	1.0	0.7	1.0	3.5	1.4	1.4	2.4	1.1	1.2	0.34
YKL218C	2.1	1.0	2.2	1.8	1.2	3.6	1.6	1.7	3.4	2.7	1.7	1.2	5.1	1.4	1.4	3.1	2.5	2.6	0.60
YLR027C	1.0	1.5	2.3	0.8	0.9	2.0	1.4	0.7	1.6	2.7	1.6	1.3	2.5	1.0	1.4	0.9	1.3	1.3	1.39
YLR133W	0.9	1.6	1.4	0.7	1.0	2.2	1.3	0.7	6.1	2.3	0.6	1.5	3.3	1.1	1.9	1.0	1.1	1.3	0.36
YLR155C	1.4	1.1	2.4	1.8	1.7	1.6	2.0	1.0	3.0	1.8	2.0	1.1	3.3	1.1	1.2	2.2	1.4	2.2	1.63
YLR158C	1.4	1.2	2.1	1.7	1.7	1.5	2.0	1.1	2.7	s	2.4	1.1	3.2	1.2	1.1	2.1	1.4	2.0	1.57
YLR195C	0.8	0.9	1.0	0.8	1.0	0.8	1.1	1.0	0.6	0.7	0.8	1.3	2.3	0.7	0.9	0.8	0.9	1.0	1.55
YLR345W	1.4	1.4	1.4	1.2	1.2	1.6	1.2	1.4	4.5	4.0	2.5	1.6	3.5	1.5	1.0	1.2	1.2	1.4	2.65
YML004C	0.8	1.6	2.5	1.0	0.7	1.7	2.1	1.9	3.9	2.2	2.2	1.1	2.4	1.4	2.1	4.5	1.5	2.4	2.41
YML131W	11.2	4.3	7.7	1.9	0.7	2.0	3.0	6.1	11.1	17.7	14.4	1.1	2.4	2.7	2.2	1.6	2.5	3.0	1.15
YNL071W	0.9	0.9	1.7	1.5	0.6	1.3	1.4	0.9	1.1	1.2	1.6	1.3	2.5	0.8	1.1	1.1	1.0	1.2	1.61
YNL241C	1.3	2.5	4.3	1.0	0.8	0.9	3.2	0.9	3.4	7.4	3.0	2.0	4.9	1.1	7.0	2.8	1.0	1.0	0.68
YOR120W	1.8	5.4	2.8	3.2	1.4	3.4	2.7	2.0	3.3	3.0	3.0	1.2	3.6	2.4	1.5	3.9	1.3	2.6	1.06
YAL023C	0.4	1.5	1.0	0.7	1.0	0.6	0.8	0.6	0.3	0.4	1.7	1.2	2.3	0.4	2.5	0.4	1.0	0.7	1.49
YAL060W	1.1	1.8	3.2	2.7	1.2	4.2	3.3	0.9	0.6	2.5	2.4	0.8	2.2	0.9	0.9	3.2	1.1	1.8	2.39
YAL062W	0.8	1.5	1.4	1.1	1.0	1.2	1.1	0.8	1.4	0.7	1.2	1.0	2.1	0.8	1.1	1.3	1.0	0.8	0.86
YBR006W	1.3	1.6	2.6	1.5	1.3	3.1	3.3	1.0	4.5	2.7	1.9	1.1	2.2	1.1	1.1	3.0	1.2	1.8	0.62
YBR056W	1.4	1.7	1.4	2.3	1.4	2.3	5.5	1.4	3.0	3.3	1.8	1.4	3.0	1.0	0.7	2.8	2.4	3.4	1.13
YBR149W	1.1	2.0	2.7	1.7	1.4	2.8	3.1	1.5	1.7	1.9	1.9	1.4	2.2	1.2	0.7	2.7	2.1	3.4	2.72
YBR284W	0.9	1.5	2.8	4.8	1.3	1.9	1.0	0.9	6.5	3.2	1.4	1.2	2.8	1.6	0.8	0.8	1.1	1.0	0.25
YCL018W	1.2	2.7	2.4	1.4	0.8	2.3	2.3	1.3	2.1	4.3	3.7	1.6	3.2	1.0	0.6	2.3	1.3	1.0	0.99
YCL040W	0.9	7.1	10.1	2.0	0.5	3.5	2.9	0.7	0.9	3.0	8.2	2.3	5.6	0.7	3.4	3.1	1.4	1.7	1.98
YDL010W	1.7	0.8	0.6	0.7	1.2	1.1	1.9	1.1	2.2	1.3	1.3	0.9	2.0	2.2	1.4	1.4	1.5	2.4	0.93
YDL024C	1.6	1.5	1.2	2.2	1.0	1.7	0.9	1.7	4.2	3.4	1.2	1.7	2.6	1.9	2.1	2.8	0.9	1.1	0.40
YDL095W	0.5	1.3	1.0	0.8	0.8	1.0	0.8	0.7	1.2	0.7	1.0	1.1	2.2	0.5	2.0	0.5	0.7	0.9	1.57
YDL245C	1.0	2.4	1.6	2.2	1.3	1.1	1.2	1.2	0.4	2.8	1.5	1.0	2.0	1.2	1.8	1.5	1.0	1.1	0.28
YDL246C	1.2	1.5	1.3	1.1	1.1	1.4	2.1	2.4	4.4	3.6	2.6	1.2	2.9	1.7	2.6	1.7	1.8	1.8	0.43
YDR001C	0.8	2.2	2.6	1.0	1.1	2.2	1.5	0.9	2.2	3.0	0.7	1.1	2.8	1.0	4.4	1.9	1.1	1.6	0.75
YDR058C	1.2	2.2	0.8	2.7	0.7	1.0	1.4	1.9	2.4	1.7	1.7	1.2	2.5	1.8	1.2	1.9	1.1	1.6	0.56
YDR072C	1.3	1.3	1.7	1.2	0.9	1.5	0.9	0.7	0.6	0.7	0.7	0.9	1.9	0.6	0.4	0.7	1.9	1.9	2.81
YDR127W	0.8	0.9	1.5	0.7	1.2	0.8	0.9	0.7	0.6	1.3	1.3	0.8	1.7	1.0	1.3	0.6	0.9	0.7	0.78

YDR261C	1.2	1.2	1.9	0.7	1.3	1.4	0.8	0.9	1.7	1.0	1.2	1.0	1.9	0.9	2.3	0.6	0.9	0.8	0.68
YDR272W	1.0	4.0	0.8	1.8	0.7	2.3	1.7	2.1	2.5	1.9	2.1	1.2	2.4	1.4	1.1	2.1	1.4	2.3	1.51
YDR497C	0.7	0.5	0.6	1.3	0.7	0.6	0.5	0.6	0.4	0.8	0.7	0.9	2.7	0.6	10.1		1.6	1.8	1.45
YDR516C	1.2	1.5	7.8	2.1	1.3	1.8	3.9	1.3	1.8	5.2	2.8	1.1	2.5	0.7	0.4	1.7	1.1	1.2	1.66
YER053C	1.6	1.8	1.9	1.7	0.6	2.8	2.8	1.3	1.3	3.9	2.4	1.7	4.1	1.3	1.1	2.8	1.2	2.3	1.83
YER096W	1.1	2.3	2.0	2.0	1.3	1.2	0.9	1.0	7.5	3.5	1.1	0.9	2.3	3.1	1.4	2.0	1.0	1.2	0.22
YER178W	0.8	0.9	3.6	1.0	0.7	2.5	1.6	0.8	1.7	1.3	2.5	1.3	2.4	0.9	1.8	1.0	1.1	0.9	2.18
YFL030W	1.6	6.0	3.1	2.0	1.1	1.3	0.6	1.6	24.5	4.9	5.4	1.2	2.2	0.8	1.1	0.6	1.0	0.8	0.50
YFL031W	0.5	1.3	2.1	0.7	1.0	0.3	0.9	0.7	1.0	0.7	1.2	1.0	2.6	0.4	2.7	0.9	1.2	1.1	3.16
YFR047C	1.3	4.0	2.7	2.6	1.2	2.0	2.0	1.0	3.0	1.5	2.3	1.7	2.7	1.9	0.6	3.6	1.5	1.6	1.57
YGL248W	1.3	1.3	0.9	0.7	1.3	2.7	1.6	0.8	0.2	2.9	1.0	0.8	2.0	1.3	1.8	2.9	1.1	1.2	0.22
YGR037C	1.0	1.2	2.2	0.8	1.0	1.1	1.4	1.4	1.7	1.4	1.4	1.5	2.7	1.5	1.5	2.6	1.4	2.0	3.40
YGR055W	2.5	5.7	12.0	0.7	1.3	1.1	0.6	1.1	5.0	2.4	1.5	0.9	1.9	1.2	2.1	0.6	0.7	0.7	1.42
YGR194C	0.9	1.0	1.3	2.1	0.8	1.9	2.2	1.2	2.4	2.1	0.7	0.8	2.2	1.0	0.6	2.6	1.1	2.0	0.63
YGR256W	1.2	1.5	2.3	0.8	0.9	6.2	1.4	2.2	3.4	2.5	2.7	1.5	3.9	1.1	2.7	5.3	1.1	0.8	0.94
YHR111W	1.4	1.3	0.8	1.9	1.5	1.3	1.6	1.3	4.5	4.2	1.9	0.9	2.2	1.7	1.1	1.3	1.1	1.2	0.44
YHR174W	1.1	1.4	3.3	1.2	1.3	1.5	1.6	1.2	1.0	1.5	1.4	1.5	3.6	0.6	2.0	1.1	1.0	1.2	7.34
YHR176W	1.8	2.0	1.1	1.4	1.0	2.3	1.4	1.3	6.3	6.4	1.2	1.2	1.9	1.3	1.5	1.8	1.4	1.6	0.27
YIL045W	1.7	1.4	1.9	2.2	1.3	1.7	1.6	1.1	2.1	3.2	1.2	1.5	2.0	1.6	0.6	2.9	1.1	1.8	0.37
YIL107C	1.5	0.8	1.1	1.5	0.8	1.0	1.6	1.3	3.5	3.5	0.9	1.1	1.9	1.6	1.0	2.7	1.2	2.0	0.58
YIL155C	1.0	0.7	1.4	3.7	1.3	1.4	2.2	1.0	2.5	2.9	1.3	1.4	2.0	1.3	1.4	3.8	1.1	1.4	0.51
YIR034C	1.2	1.1	2.5	0.6	1.1	1.3	0.8	1.7	3.2	3.5	3.0	1.4	2.6	1.2	1.9	1.3	1.0	1.0	0.92
YIR036C	1.0	1.7	2.6	1.8	0.9	0.7	1.0	1.0	3.3	1.9	2.8	1.2	1.9	1.2	1.1	4.0	1.5	1.3	0.64
YJL031C	1.6	1.2	0.5	1.3	1.7	1.6	2.3	1.8	4.7	3.6	1.9	1.3	2.6	3.0	2.0	1.9	1.2	1.9	1.02
YJL068C	1.2	2.7	3.4	1.6	0.7	1.1	1.2	1.1	6.5	3.1	3.2	1.7	2.7	1.5	0.5	2.6	1.4	1.5	0.95
YJL099W	1.2	1.2	0.3	1.3	1.9	2.0	1.8	1.0	3.1	3.1	0.9	1.0	2.4	1.8	1.4	1.7	1.2	1.6	0.55
YJL172W	0.8	2.1	1.8	1.5	0.9	3.8	1.0	0.7	0.7	1.9	1.4	1.1	3.1	0.9	1.2	0.5	1.8	1.8	0.62
YJL219W	1.2	2.5	3.1	1.6	1.2	1.5	0.9	1.5	4.0	2.3	2.3	1.1	4.0	1.1	2.6	1.4	1.6	1.2	0.91
YJR137C	2.7	2.9	4.6	0.8	0.6	1.5	0.8	1.6	9.0	4.8	2.0	1.4	2.1	1.2	1.0	1.3	0.9	0.8	0.46
YKL035W	1.0	0.9	4.8	1.2	0.8	1.2	0.6	1.0	0.8	1.2	2.1	1.0	2.0	0.6	1.0	1.5	1.0	1.9	2.54
YKL091C	1.2	1.3	1.4	2.6	1.0	2.2	1.9	1.3	2.3	3.2	1.7	1.3	2.0	1.5	1.1	4.6	1.4	2.0	0.83

YKL104C	1.0	1.0	1.6	1.2	1.4	0.9	2.3	1.1	1.4	1.8	2.2	1.6	2.2	0.8	3.3	0.6	1.0	1.1	1.25
YKL152C	1.3	1.3	1.9	0.9	1.3	1.6	1.5	1.0	0.9	1.5	1.7	1.5	2.7	1.0	1.8	2.0	1.1	1.7	3.28
YKL213C	0.9	0.8	1.0	1.3	0.7	1.0	1.0	1.1	4.8	2.1	1.3	0.9	2.1	0.9	1.1	1.5	1.4	1.6	0.77
YKL215C	0.6	1.1	1.3	0.8	1.0	2.1	1.1	1.1	1.3	1.9	0.5	1.0	2.6	1.0	0.9	0.8	0.8	0.9	0.38
YLL058W	1.0	3.8	1.4	0.9	0.8	1.4	1.5	0.9	3.5	3.6	2.0	1.0	2.3	0.8	1.9	1.1	1.4	1.3	0.39
YLR299W	1.2	1.9	1.5	1.3	0.6	0.9	0.8	1.0	4.9	2.3	1.7	1.0	2.9	1.3	1.5	0.9	1.3	1.4	0.57
YLR348C	1.1	4.5	1.2	1.2	0.9	1.9	0.9	0.9	2.1	1.3	1.3	0.9	1.9	1.0	2.4	1.1	1.1	1.0	0.64
YML054C	1.5	1.8	1.3	3.4	1.3	1.8	1.2	1.5	4.1	1.8	1.4	1.8	2.8	2.1	1.1	7.8	1.1	1.6	0.25
YML070W	0.9	1.7	2.5	1.9	1.4	2.2	3.1	1.3	4.5	3.9	1.5	1.3	3.3	1.3	0.9	2.6	1.2	1.3	1.03
YML100W	0.8	2.7	10.6	1.4	0.9	2.8	2.2	0.7	1.7	1.4	3.2	1.2	3.8	1.2	1.8	2.2	1.0	1.5	0.88
YMR008C	0.7	0.9	1.4	1.0	1.1	1.7	0.9	0.5	0.3	0.6	1.3	1.1	3.7	0.7	2.0	1.2	3.0	1.9	1.59
YMR020W	1.3	1.0	0.9	1.7	1.4	1.6	2.7	1.2	2.3	2.9	1.5	1.1	3.0	1.1	1.8	2.8	2.3	2.2	0.81
YMR105C	1.9	3.0	5.0	4.2	0.9	2.8	2.8	1.1	0.6	2.9	3.0	1.7	3.3	1.0	0.9	2.0	1.6	2.6	1.21
YMR271C	1.6	1.6	1.3	2.0	1.1	4.2	3.4	1.8	8.0	4.4	1.7	1.3	3.6	1.8	0.6	5.7	1.3	2.2	0.70
YNL012W	1.3	1.3	1.8	0.8	1.3	1.7	2.0	1.8	3.3	3.2	1.6	1.3	2.9	1.0	1.6	1.2	1.3	1.5	0.24
YNL045W	0.8	1.3	2.0	1.3	1.1	2.2	1.8	0.7	1.3	1.1	2.1	0.9	2.6	0.8	0.8	2.4	1.1	1.1	0.80
YNL104C	1.1	1.3	3.0	0.9	0.8	0.8	0.6	0.9	1.1	2.0	2.1	1.1	2.1	0.9	2.5	1.5	0.9	0.9	1.69
YNL231C	1.5	0.8	0.8	0.5	2.1	1.8	2.5	1.5	2.2	1.3	1.3	1.8	2.9	0.9	0.9	0.7	3.1	4.0	2.13
YNR019W	1.0	1.3	1.6	1.2	0.8	1.3	0.8	0.7	1.8	1.9	0.7	1.0	2.1	1.0	1.6	0.8	2.4	2.0	0.37
YNR033W	0.6	0.8	0.8	1.0	1.3	1.6	1.2	1.1	3.6	4.2	0.4	1.1	3.8	0.9	1.3	2.2	0.9	1.1	0.72
YNR059W	1.1	0.9	0.2	1.4	1.4	0.8	1.6	1.3	1.8	1.4	1.0	0.8	2.4	1.0	1.0	2.0	2.6	2.2	0.45
YOL126C	1.0	0.8	1.0	1.6	0.7	1.5	1.4	0.9	0.8	2.4	1.8	1.1	2.6	1.2	1.4	2.5	1.6	2.4	0.59
YOL153C	1.0	1.2	2.1	3.9	1.2	1.9	3.3	1.0	2.5	3.2	2.4	1.9	2.9	1.5	1.2	5.4	1.1	1.7	0.37
YOR099W	0.8	1.3	2.1	1.3	1.5	0.9	1.0	0.9	0.6	0.7	1.2	1.1	1.6	0.7	1.5	1.1	1.2	2.3	3.94
YOR130C	0.8	1.7	1.4	1.0	1.8	1.6	1.3	0.8	2.0	1.7	0.6	0.9	2.1	1.3	1.0	0.8	1.5	1.1	0.51
YOR336W	0.7	1.4	0.7	1.0	1.3	1.7	1.2	0.8	1.7	1.5	1.4	1.0	2.1	1.1	0.6	0.9	1.0	1.0	0.44
YOR347C	0.9	0.9	2.1	2.2	0.7	0.9	0.9	0.8	0.5	0.9	1.4	1.2	1.8	0.9	2.0	1.4	1.7	1.3	1.31
YPL017C	1.0	2.5	0.8	1.0	1.3	1.5	1.4	1.3	3.0	6.7	0.4	1.0	1.9	1.6	1.0	1.3	1.3	0.8	0.19
YPR026W	0.9	1.2	5.0	1.3	0.8		1.3	1.0	0.9	3.1	1.6	1.2	2.3	1.5	3.1	2.5	0.9	1.3	0.26
YAL012W	1.1	6.5	10.4	0.8	0.6	1.6	0.6	0.7	4.7	3.9	4.0	1.1	1.1	0.9	3.1	1.0	0.9	0.8	0.96
YBR029C	0.7	0.2	1.8	1.0	1.4	0.8	0.4	0.7	2.0	1.1	0.7	1.3	1.7	0.9	3.5	0.9	0.6	0.8	1.56

YBR222C	0.6	1.2	1.3	0.8	0.7	1.3	1.0	0.6	0.7	1.0	1.3	0.9	1.6	0.5	4.3	2.1	0.8	0.9	0.52
YCL009C	0.6	0.9	2.0	0.5	0.7	1.8	1.3	1.1	0.9	1.6	1.5	1.7	1.6	0.7	6.5	0.9	1.1	0.8	0.68
YCL064C	0.6	0.6	0.8	0.8	1.4	3.3	13.4	2.4	1.7	5.2	1.8	0.7	1.6	0.8	21.4	1.0	0.3	0.3	1.42
YCR098C	1.6	3.0	1.7	2.0	1.4	1.6	1.2	1.0	1.4	2.4	1.3	1.3	1.4	1.1	11.0	0.8	1.7	1.6	0.22
YDR502C	1.2	2.8	2.4	1.2	1.5	1.5	0.9	0.9	1.6	0.9	1.3	1.3	1.2	0.8	8.2	1.0	0.9	0.9	2.75
YER026C	0.8	0.6	3.3	1.0	1.2	2.5	1.6	0.8	0.9	1.5	0.9	1.7	1.9	1.1	4.0	1.4	1.7	3.2	4.48
YHR137W	0.7	1.0	2.4	1.7	1.0	0.7	0.4	0.4	0.2	0.9	0.6	0.6	0.6	0.8	2.8	0.4	0.8	1.3	1.40
YMR189W	0.7	0.8	1.9	2.8	0.4	1.9	0.8	0.4	0.7	0.9	8.2	0.6	0.9	1.6	5.6	0.9	1.0	0.8	0.88
YNL106C	1.0	1.4	0.8	1.5	0.8	1.0	0.9	0.8	0.7	1.4	0.9	0.8	0.9	1.1	3.3	1.2	1.1	0.9	0.37
YNL169C	0.7	1.4	1.4	1.2	0.7	1.4	0.7	0.8	1.1	1.1	0.8	1.0	1.7	0.9	3.4	0.8	1.1	1.3	1.05
YNL322C	0.8	0.9	1.9	0.8	1.4	1.1	0.9	0.7	0.7	0.8	0.6	0.7	0.8	1.2	3.7	0.9	0.9	1.0	0.75
YAL038W	1.0	1.0	3.0	1.4	1.4	1.3	0.9	1.1	0.1	1.1	1.0	1.2	1.8	0.5	3.1	0.9	1.0	1.0	7.02
YBR023C	0.5	0.8	1.3	1.1	0.8	0.5	0.7	0.5	0.3	0.4	0.9	0.8	0.5	0.8	2.8	0.7	0.7	0.9	0.93
YCR048W	0.5	1.1	1.0	0.6	0.9	0.2	0.9	0.8	0.8	0.5	1.2	0.9	1.3	0.9	3.1	1.1	1.2	0.8	0.29
YDR380W	0.8	0.8	0.8	1.7	1.1	1.1	0.4	0.2	0.2	0.3	0.4	0.4	0.4	0.6	2.4	0.2	0.8	0.8	1.04
YER069W	1.3	0.8	3.3	1.4	1.5	1.3	1.0	1.5	0.8	10.4	1.5	0.8	1.4	1.3	2.4	1.1	1.1	0.9	0.25
YGL022W	0.5	0.8	1.4	0.3	1.0	0.9	0.7	0.4	0.9	0.4	0.8	0.7	1.0	0.5	4.0	0.3	0.9	0.7	0.91
YGL126W	0.6	1.3	1.4	0.8	1.1	1.6		0.7	1.6	0.7	1.0	0.6			2.8		0.9	0.9	0.34
YGL209W	1.2	1.6	1.1	2.6	0.7	1.0	1.0	1.1	0.6	0.4	0.8	1.3	1.9	1.6	3.2	2.8	1.1	1.5	0.63
YGR282C	1.3	0.7	4.6	1.9	1.0	2.2	1.1	1.0	0.8	0.8	1.5	1.3	1.2	1.0	2.9	1.4	1.1	1.5	5.04
YIL154C	0.8	1.3	1.9	0.8	0.9	1.1	1.3	0.6	2.4	1.0	1.2	1.1	1.7	0.9	4.3	1.2	1.2	1.0	0.39
YJL088W	0.9	0.8	2.2	0.5	0.9	2.8		1.3	3.2	4.1	0.9	0.7	1.0	2.0	5.7	0.7	1.4	0.9	0.27
YJR148W	0.7	1.4	2.0	3.5	0.6	2.0	2.1	0.6	0.7	3.0	0.6	0.8	1.1	1.3	3.2	1.3	1.3	1.7	1.50
YLR180W	1.3	1.4	2.4	1.0	0.8	1.2	0.6	0.9	0.8	0.9	1.7	0.6	0.6	0.6	2.5	0.5	0.8	0.7	3.23
YLR273C	1.4	1.0	1.3	2.4		1.2	1.2	1.3	2.8	2.4	1.4	0.9	1.7	1.3	2.6	1.5	1.0	1.0	0.20
YLR300W	0.9	0.8	0.8	1.0	0.8	1.1	0.5	0.8	0.0	0.5	1.0	0.5	0.2	0.6	2.7	0.3	0.7	0.5	5.14
YLR307W	0.9	0.4	0.7	3.3	1.4	1.2	1.5	1.2	0.6	0.7	0.8	0.7	1.0	1.9	3.9	0.9	1.1	1.0	0.16
YMR296C	0.6	0.7	1.2	2.6	0.4	0.4	0.6	0.5	0.4	0.6	0.8	0.8	0.9	0.7	6.7	0.5	0.8	0.7	0.52
YOL058W	0.8	0.5	1.7	0.9	1.2	0.8	0.4	1.6	0.1	15.7	2.3	1.3	1.2	1.5	2.7	0.9	1.2	0.8	0.82
YBR183W	1.8	1.5	2.0	2.9	0.9	2.5	1.7	1.0	0.4	2.0	1.9	1.2	1.4	1.3	1.1	2.1	1.4	2.4	1.47
YDR019C	1.4	0.5	1.7	4.0	0.9	4.8	1.4	0.7	0.4	0.7	1.8	0.7	1.0	1.6	1.8	1.8	1.2	1.6	2.48

YIL167W	3.3	1.6	2.0	1.0	1.0	7.7	1.2	1.9	6.9	12.7	1.9	0.7	1.2	1.4	0.6	2.3	0.7	0.8	2.11
YKR039W	1.4	3.5	1.3	1.7	1.0	2.8	1.0	1.0	1.9	2.0	1.9	1.5	1.3	1.2	1.7	1.9	0.9	1.1	0.40
YNL037C	1.4	1.8	1.7	1.1	1.7	2.8	2.8	1.0	0.6	3.2	1.4	1.3	1.9	1.3	0.9	1.4	0.9	1.3	2.05
YNR002C	1.3	1.6	1.0	2.0	1.2	2.3	1.2	1.0	3.9	1.6	1.6	1.2	2.1	1.2	1.0	2.4	1.5	2.1	0.29
YOL143C	1.0	1.4	1.2	1.2	0.9	3.5	1.3	1.2	0.8	1.0	2.0	1.2	1.2	0.7	1.0	2.2	1.8	1.4	2.30
YOR136W	1.0	0.9	3.5	1.0	1.5	3.9	3.2	1.1	0.3	3.4	1.4	1.2	1.5	0.9	1.2	1.3	0.8	1.3	3.20
YAL044C	1.5	1.1	1.0	3.0	0.8	2.2	1.0	0.8	0.4	0.6	1.4	0.6	1.1	1.4	0.7	1.0	1.4	1.8	4.07
YAL054C	1.2	1.1	1.4	1.6	1.1	2.2	1.1	1.1	8.9	4.1	1.3	1.0	1.8	1.3	0.9	2.5	1.5	1.4	0.24
YAR071W	1.6	0.8	1.0	0.7	1.6	2.0	0.3	1.4	0.3	0.3	1.1	2.0	0.3	1.1	1.1	0.3	0.7	1.6	3.21
YBL001C	1.1	1.5	1.0	1.6	1.0	2.4	1.3	1.0	1.5	0.9	2.3	0.7	1.0	1.5	1.0	1.7	1.6	1.8	2.38
YBR014C	1.1	1.2	0.8	0.9	1.4	2.0	1.4	1.2	1.3	0.8	1.8	0.6	0.9	1.2	1.2	1.5	1.0	1.6	1.29
YBR035C	1.1	1.0	1.7	1.1	1.3	2.3	1.5	1.5	2.2	1.5	2.0	1.2	1.8	1.3	0.7	2.1	1.5	1.9	1.89
YBR068C	1.1	1.0	1.9	2.5	1.4	1.9		1.0	0.8	2.5	0.8	0.8	2.2	1.8	1.6	5.5	1.1	1.3	1.99
YBR111C	1.0	0.9	1.0	1.7	1.3	3.0	2.2	1.7	1.9	1.9	1.5	1.2	1.6	1.6	0.7	3.5	1.4	2.4	3.20
YCR037C	0.7	1.0	0.8	0.8	1.3	1.8	1.0	0.7	0.6	0.6	0.8	0.7	1.3	0.8	1.0	1.1	1.4	0.9	0.74
YDL022W	0.9	2.6	6.9	1.5	0.7	2.1	1.5	0.8	1.2	1.8	2.8	1.2	1.5	0.8	0.9	1.1	1.0	1.4	1.79
YDR009W	1.4	0.8	1.5	1.0	1.2	2.4	1.4	1.2	1.3	2.0	0.1	1.0	1.2	1.5	3.2	1.0	1.2	1.0	0.21
YDR410C	0.8	2.0	1.3	0.9	1.1	2.5	1.4	0.9	1.2	1.5	1.6	0.9	1.2	1.3	1.2	0.8	1.0	1.0	1.33
YDR487C	2.2	0.9	1.3	1.1	1.3	2.3	1.3	1.8	2.7	2.3	2.1	1.3	1.5	2.5	1.0	1.5	1.5	1.9	2.61
YEL011W	2.0	1.6	1.7	6.3	1.1	2.8	2.7	0.9	2.5	1.6	3.7	1.5	1.5	1.5	0.4	2.4	1.4	2.5	0.89
YFR015C	1.2	0.8	3.2	2.1	1.2	3.0	7.3	0.7	0.3	1.8	3.9	0.4	2.5	3.1	0.4	2.4	1.3	1.2	0.66
YGL001C	1.0	1.0	1.4	1.1	1.5	2.8	1.4	1.1	0.8	0.8	1.6	0.9	1.0	1.1	0.9	2.2	1.9	2.1	2.53
YGL104C	0.8	2.0	2.1	1.8	1.0	2.1	1.2	0.8	4.6	2.1	1.8	1.1	2.0	1.0	0.9	1.7	1.3	1.3	0.58
YGL154C	1.3	1.4	1.5	0.9	1.0	1.7	0.7	1.2	2.0	1.4	0.9	0.9	2.0	1.1	0.8	0.7	1.0	1.1	0.57
YGL253W	0.8	1.0	3.2	0.7	1.3	2.4	1.7	1.1	0.3	1.4	1.0	1.2	1.5	0.5	0.8	0.4	0.7	0.8	4.63
YGR060W	0.7	0.6	0.9	0.7	1.9	2.5	0.5	1.0	0.5	0.4	0.8	1.0	0.6	0.8	1.4	2.1	1.3	1.6	4.19
YHR037W	0.7	0.9	1.3	1.6	0.9	1.8	1.2	1.0	0.9	2.2	1.7	1.1	1.1	1.1	1.1	2.0	1.0	1.4	1.15
YHR092C	2.3	1.0	7.5	2.5	1.4	1.7	0.5	1.5	0.2	0.9	1.5	1.0	0.5	1.6	0.2	1.2	0.9	1.3	6.09
YHR190W	0.8	3.9	1.2	1.2	1.8	1.7	1.9	1.2	2.4	1.9	1.3	1.1	1.7	1.3	1.3	1.8	1.3	1.8	2.15
YIL033C	0.8	1.3	3.3	1.3	0.7	2.0	1.1	0.7	2.4	1.3	1.8	1.1	2.5	0.7	1.0	2.0	1.0	1.2	1.18
YIR035C	1.4	1.8	0.9	1.6	0.7	2.1	1.3	1.3	0.7	1.2	1.3	0.9	1.1	1.1	1.4	1.0	1.1	0.9	1.51

YJL132W	1.0	0.7	0.8	1.6	1.3	2.0	1.7	1.0	1.6	1.4	1.4	1.0	1.3	1.4	1.1	2.1	1.3	1.5	0.37
YJL196C	0.9	0.9	2.5	1.3	1.1	2.0	0.7	0.7	1.1	0.9	2.3	1.1	0.6	0.8	0.6	1.7	0.9	1.9	2.85
YJR142W	1.2	0.6	1.1	1.1	1.3	2.4	1.7	1.0	0.6	0.8	0.9	0.8	1.6	1.3	0.6	2.0	1.2	1.4	0.94
YKL067W	1.1	1.9	2.1	1.4	1.9	2.2	2.6	1.2	0.9	1.6	1.8	0.9	1.7	1.2	1.1	2.4	1.4	3.2	3.29
YLR142W	4.4	2.7	1.1	6.1	1.3	3.1	1.2	2.1	3.1	4.4	3.8	0.8	1.2	2.1	1.6	3.4	1.9	3.2	0.28
YML110C	1.1	0.8	1.9	1.6	0.8	2.6	2.0	1.4	2.7	2.2	1.7	1.1	1.8	1.4	1.3	2.3	1.1	1.6	2.01
YMR272C	0.7	1.0	1.6	0.7	1.1	2.6	1.0	0.8	0.4	0.6	0.8	1.2	1.2	0.8	1.1	1.5	1.3	1.4	1.66
YNL130C	0.6	0.7	2.4	0.7	0.8	2.4	1.3	0.8	1.7	2.4	1.5	0.9	1.9	1.0	2.5	0.7	0.7	1.2	1.18
YPR006C	1.9	1.5	0.5	1.9	2.0	2.4	2.8	1.5	1.5	3.9	2.4	1.1	1.8	1.2	0.7	1.6	1.8	2.1	0.46
YBR050C	2.4	1.9	1.9	3.1	1.0	4.1	2.6	1.7	5.8	3.2	1.1	1.0	1.3	1.3	0.5	1.7	1.5	1.8	0.41
YBR145W	1.5	0.7	2.8	0.9	1.1	11.5	58.8	1.0	0.1	1.1	1.1	1.0	2.0	2.2	1.2	3.6	1.7	2.0	2.17
YBR299W	1.8	0.9	1.1	3.5	1.6	0.8	3.6	2.2	1.1	5.3	2.4	1.2	0.7	1.4	0.6	3.9	1.0	1.1	0.32
YEL020C	1.0	1.5	0.8	2.9	1.5	1.3	2.4	1.2	1.4	1.1	1.3	0.8	1.2	1.0	1.4	2.1	1.2	1.3	0.31
YGL039W	0.8	1.4	2.1	1.3	1.3	1.7	4.2	1.3	0.7	2.8	1.1	1.3	1.5	0.9	1.5	1.5	0.6	1.0	1.09
YGL134W	0.9	1.3	0.5	0.8	1.4	1.2	2.3	1.4	1.1	1.4	1.1	0.9	0.7	1.1	0.5	1.7	0.9	1.3	0.53
YJR159W	1.4	2.3	1.3	1.7	0.9	1.4	2.3	2.7	5.2	2.8	2.2	1.5	2.1	2.0	2.3	5.2	1.7	2.3	0.30
YOL157C	1.0	1.1	1.3	2.5	1.4	0.9	2.7	1.4	2.3	4.8	1.2	1.2	1.4	1.2	1.1	3.5	1.4	1.3	0.41
YOR344C	1.1	1.1	0.4	0.7	1.9	2.0	2.4	1.4	0.3	0.9	0.6	1.3	1.8	0.6	0.7	0.6	1.3	1.3	2.11
YPL265W	0.7	0.4	2.3	1.1	1.0	2.3	8.9	2.3	0.2	1.2	1.8	0.9	1.1	1.1	1.2	2.0	0.5	0.4	1.42
YBR126C	0.8	1.9	5.6	1.2	0.7	2.9	2.3	0.6	1.7	1.1	1.1	1.3	2.1	0.7	1.0	1.7	1.5	1.3	1.96
YCR005C	1.1	1.9	2.0	1.2	0.9	1.6	4.4	1.2	1.5	1.5	2.1	0.5	0.7	0.8	0.7	0.7	1.6	1.7	2.38
YDR452W	1.1	1.1	1.3	0.8	1.2	2.0	1.9	1.0	1.4	1.3	1.5	0.9	1.4	1.2	1.3	1.3	1.9	2.2	1.54
YGR019W	1.2	0.8	1.4	1.7	0.8	2.4	2.4	1.2	2.9	1.1	1.1	1.2	2.1	1.3	2.2	2.4	1.3	2.0	0.79
YGR255C	0.9	1.4	1.4	1.5	1.3	3.2	1.8	1.0	2.5	1.8	2.0	1.3	2.5	0.9	1.0	1.1	1.1	1.1	0.81
YIL098C	1.4	1.6	0.5	2.0	1.7	1.7	2.2	1.6	1.9	1.9	1.4	0.8	1.3	1.9	0.7	2.0	1.2	1.6	0.75
YIL172C	1.1	1.1	1.6	1.7	1.8	1.3	2.5	1.6	2.8	7.1	1.0	1.4	2.0	1.3	1.4	2.8	1.1	1.2	0.42
YLR100W	0.8	1.4	1.3	1.9	1.8	1.8	2.3	1.0	0.9	1.0	0.9	1.1	1.6	1.1	0.6	1.9	1.5	2.1	1.88
YOR221C	0.8	1.0	0.9	1.1	1.7	0.8	2.1	0.9	1.4	1.7	1.1	0.8	1.0	1.1	1.0	1.4	0.9	1.2	0.39
YPL123C	1.2	0.8	1.8	3.0	0.8	1.9	2.7	1.2	4.2	2.3	1.9	1.0	2.2	1.6	1.4	2.6	1.6	3.2	0.71
YBR093C	2.9	1.2	1.7	1.3	1.1	0.6	0.3	1.7	0.1	0.5	3.1	2.0	0.2	1.3	2.7	0.4	0.8	1.9	3.33
YBR196C	0.8	0.6	3.9	1.4	0.8	0.8	1.4	1.1	0.3	0.9	2.3	1.0	1.4	0.5	1.9	1.1	0.8	1.0	6.60

YER023W	0.8	0.6	1.2	1.2	0.8	1.3	0.7	0.9	1.1	0.6	2.1	0.8	1.2	0.7	1.2	1.6	1.5	1.4	1.77
YFL055W	2.0	6.7	1.3	2.5	1.5	1.1	1.4	1.3	23.9	6.5	2.7	0.9	1.3	1.5	0.7	1.4	1.4	1.0	0.23
YIL124W	0.9	0.8	2.8	1.6	0.9	1.2	1.3	0.9	1.0	0.7	2.8	1.1	0.9	1.1	0.6	3.1	1.2	2.1	2.39
YMR318C	1.4	2.4	2.2	0.7	1.2	2.1	0.8	3.6	2.3	4.8	3.6	0.8	1.8	1.7	1.5	1.1	1.1	1.1	3.17
YBR067C	1.6	2.5	2.8	0.9	1.1	1.1	1.1	1.1	1.7	1.0	3.1	1.0	0.9	0.7	3.3	2.5	0.5	0.4	1.76
YBR115C	0.6	0.7	1.4	0.4	0.7	0.9	1.1	1.3	0.8	1.6	1.8	0.9	2.3	0.7	1.1	0.5	0.6	0.6	0.64
YDL131W	1.1	0.9	1.8	1.0	1.0	0.9	0.7	2.2	0.8	2.7	2.2	1.2	1.0	0.9	1.1	0.9	0.7	0.6	1.81
YDL168W	2.3	2.0	2.1	0.9	1.2	1.4	1.1	1.7	8.2	4.7	1.9	0.6	1.3	1.6	1.2	1.1	0.9	0.8	1.08
YDR216W	1.3	1.1	2.0	2.6	0.8	1.3	1.0	1.0	2.5	2.7	2.1	1.0	2.4	0.9	2.5	1.6	1.0	1.8	0.44
YDR253C	5.7	6.4	1.4	3.2	0.9	0.8	1.0	1.7	14.8	6.3	2.3	1.0	2.2	3.6	1.2	1.6	1.0	1.0	0.38
YDR513W	2.2	2.5	2.3	2.6	0.9	2.1	1.6	1.6	4.6	3.1	2.0	0.9	1.8	2.0	1.3	3.8	1.3	3.2	3.10
YER061C	0.9	0.9	1.2	2.5	0.8	0.4	0.9	0.7	0.3	0.7	2.2	0.7	0.9	1.0	0.8	1.8	1.2	1.2	0.84
YFL052W	1.3	0.8	0.7	2.3	1.5	2.1	1.4	1.3	0.6	1.2	2.3	0.8	1.0	1.6	0.4	1.0	1.1	0.9	0.32
YFL058W	1.2	1.7	1.1	1.4	1.1	2.0	0.9	1.7	3.2	2.4	2.4	1.2	1.2	1.0	1.7	0.7	1.1	0.9	0.40
YFR030W	3.1	5.5	8.5	0.5	0.8	1.8	1.1	1.7	24.1	9.0	2.4	2.4	4.1	1.3	1.7	1.6	1.3	0.9	0.30
YGL202W	0.8	0.7	2.2	0.7	0.7	0.7	0.6	1.0	1.3	1.7	2.4	0.9	1.1	0.8	2.2	0.6	1.3	0.9	1.70
YGR070W	1.1	1.0	2.0	1.5	1.4		1.4	1.8	1.1	1.5	1.8	0.6	1.4	1.0	2.6	2.3	1.2	1.3	0.40
YHL036W	2.2	4.8	3.4	2.0	1.3	1.3	1.0	1.2	9.0	4.4	2.3	1.2	1.5	1.2	0.9	1.1	1.0	1.0	0.60
YHR104W	1.0	4.1	15.7	1.9	1.1	1.2	1.5	1.1	4.8	2.3	2.6	1.0	1.2	1.5	1.6	1.3	1.9	1.9	1.57
YJL045W	1.8	2.2	1.6	5.3	0.7	0.6	0.7	0.9	9.7	1.6	2.3	1.1	1.6	1.2	3.4	2.4	0.9	0.9	0.42
YJL060W	1.8	2.6	9.6	1.0	1.4	1.3	1.3	0.8	5.3	2.8	1.6	1.5	2.1	1.7	1.4	1.5	1.2	1.1	0.95
YJL155C	2.1	5.0	0.8	2.4	0.8	0.8	2.0	1.5	3.8	2.8	2.4	1.0	6.6	1.2	1.2	2.3	1.8	3.1	0.60
YJR109C	0.8	0.7	1.4	0.9	0.7	0.9	0.8	1.0	1.8	4.3	1.5	1.4	3.1	0.9	1.3	0.5	1.1	0.6	0.84
YJR156C	1.6	3.2	2.4	1.8	0.9	0.9	1.3	1.5	3.4	2.8	3.0	1.1	1.6	2.4	3.0	2.3	0.8	1.1	0.24
YLR092W	5.0	7.5	1.4	0.6	1.3	1.0	1.3	1.5	12.7	5.8	3.1	1.0	1.8	1.4	0.9	1.2	1.0	1.1	0.24
YMR081C	3.5	1.4	2.0	5.8	1.7	1.1	0.9	1.7	0.3	2.2	2.5	1.1	0.7	1.8	0.2	3.0	1.9	3.0	0.62
YMR250W	0.9	5.1	5.6	1.3	0.6	4.5	3.0	0.9	6.1	2.4	4.3	1.2	2.6	1.1	2.0	5.0	1.2	3.0	0.84
YNL277W	5.7	10.3	5.3	0.6	1.1	1.7	1.4	2.2	55.0	10.9	3.2	1.3	1.8	1.5	0.6	1.3	0.9	0.7	0.27
YOR184W	1.1	0.9	2.1	2.1	1.0	0.6	1.2	0.7	0.9	0.7	2.7	0.7	0.6	0.7	1.0	0.9	1.2	1.2	3.19
YPR160W	1.4	3.8	3.6	3.3	0.7	4.5	1.8	0.9	0.9	1.3	4.4	2.1	2.2	1.1	1.4	5.3	1.0	2.9	1.42
YDL182W	0.8	0.7	1.3	0.8	1.3	1.0	1.0	2.9	0.8	2.4	2.0	1.4	1.5	0.8	0.7	1.1	0.6	0.6	2.31

YBR291C	2.0	0.9	1.0	1.5	0.9	1.1	0.9	1.1	2.2	0.9	1.0	1.1	0.9	1.0	1.7	0.5	1.5	0.9	1.3	1.19
YIL094C	1.5	0.4	0.8	0.7	1.4	1.2	1.3	3.6	0.3	0.4	1.8	1.0	1.0	0.7	1.0	0.5	0.9	0.9	1.0	2.26
YNR050C	1.7	0.5	1.2	0.6	1.3	0.9	1.0	2.2	0.4	0.7	1.5	1.0	1.0	1.1	0.6	0.3	1.4	0.6	0.7	2.13
YDL244W	1.1	3.5	1.8	1.6	0.9	1.3	1.7	1.8	2.5	3.7	1.2	1.2	1.2	2.0	2.0	2.9	1.5	1.1	1.0	0.25
YDR054C	1.3	1.0	0.7	1.4	0.7	1.0	1.1	1.5	2.9	3.2	1.9	1.0	1.0	2.5	1.1	1.6	1.4	0.8	1.4	1.18
YDR353W	0.9	1.6	3.4	1.6	0.6	0.9	1.0	1.1	2.0	5.1	1.4	0.8	0.8	0.7	1.6	1.3	1.0	0.9	1.3	3.20
YEL070W	1.4	0.9	1.6	3.4	1.3	1.2	1.3	1.2	1.9	13.0	1.1	1.1	1.1	1.1	2.1	3.2	1.9	0.9	1.0	0.27
YIL168W	2.8	1.4	1.0	1.2	1.4	0.7	1.3	1.6	7.8	19.3	1.9	0.8	0.8	0.9	1.5	1.2	1.2	1.0	1.1	0.39
YJL221C	1.1	1.0	1.1	1.3	0.9	6.6	2.5	1.8	2.7	4.4	0.8	1.1	1.1	1.4	1.1	1.1	3.3	1.1	1.4	0.41
YJR095W	1.2	20.5	1.9	6.7	1.2	1.5	2.0	0.9	0.5	6.3	0.6	0.7	0.7	0.8	1.3	0.8	0.8	1.3	0.9	0.23
YKL085W	1.4	2.3	1.6	1.2	1.2	1.9	1.5	1.2	1.9	3.0	1.8	0.8	0.8	1.5	1.0	0.5	1.7	0.9	1.3	2.16
YKL188C	1.3	0.7	1.9	2.4	1.0	0.8	1.1	0.7	2.5	2.8	1.1	1.2	1.2	1.2	2.1	1.4	2.7	1.1	1.5	0.27
YKL217W	1.8	2.4	1.0	2.1	1.1	1.2	1.6	1.1	0.9	4.1	1.6	0.8	0.8	1.2	1.2	2.2	3.0	1.7	3.3	0.29
YKR061W	2.0	0.9	0.5	1.9	1.2	1.2	1.4	1.5	1.5	2.6	1.1	0.9	0.9	0.9	1.6	0.9	0.8	1.5	1.6	0.70
YLR174W	1.2	1.5	1.7	2.1	0.9	0.9	1.6	1.1	2.5	8.3	1.3	1.3	1.3	1.8	1.7	0.8	4.6	0.9	1.2	0.41
YLR260W	1.1	1.5	1.5	2.4	1.2	1.0	1.2	1.2	2.6	3.2	0.6	0.8	0.8	1.9	1.2	1.0	1.0	1.1	1.2	0.44
YNL009W	1.1	1.9	2.0	1.4	1.4	1.1	1.2	1.1	1.4	3.3	1.3	0.9	0.9	1.3	1.3	2.7	3.3	1.2	2.3	0.45
YNL117W	0.9	4.7	1.7	0.8	0.8	1.1	1.1	1.7	12.8	4.4	1.4	0.7	0.7	1.3	2.0	2.6	1.6	1.1	0.9	0.24
YNL183C	0.9	3.5	6.4	1.3	0.7	1.2	1.3	0.9	4.8	4.3	1.3	1.1	1.1	2.3	1.1	1.1	1.2	0.8	1.0	0.47
YNR073C	1.1	1.4	0.8	2.7	1.4	1.7	2.2	1.5	2.5	16.8	2.2	1.1	1.1	1.2	2.3	1.7	1.6	1.0	0.9	0.18
YPL161C	1.0	1.7	1.1	1.1	0.8	0.7	1.3	1.8	1.2	2.7	1.0	1.0	1.0	1.2	1.1	0.8	1.4	1.3	1.3	0.41
YAL061W	1.7	2.4	3.3	3.8	1.0	1.0	2.0	0.8	5.5	1.4	4.1	1.1	1.1	1.4	0.7	0.6	1.1	1.4	1.2	0.88
YAL067C	2.7	7.5	1.5	1.4	0.7	1.2	0.8	1.1	7.6	2.9	1.2	1.0	1.0	1.1	1.3	2.4	1.6	1.0	1.0	0.33
YBL033C	1.3	1.9	2.4	1.0	1.1	0.4	0.9	1.4	6.6	4.2	1.1	0.9	0.9	1.8	1.4	1.0	1.2	1.2	1.0	0.53
YBL086C	0.8	0.5	1.0	0.6	1.3	0.7	1.0	1.1	3.3	1.4	1.3	0.5	0.5	0.9	0.8	0.5	1.4	0.9	1.0	0.43
YBR117C	0.8	1.6	1.5	1.4	0.9	2.3	1.0	0.7	5.9	1.5	0.4	0.8	0.8	2.1	0.9	1.0	12.0	0.7	0.7	0.49
YBR213W	1.0	1.6	1.0	0.5	1.1	2.4	1.3	1.3	11.4	2.3	0.5	1.2	1.2	1.4	1.3	1.7	0.8	0.9	0.9	0.23
YCR036W	1.3	1.2	1.3	1.3	1.5	1.4	1.5	1.1	2.6	1.5	1.0	1.3	1.3	1.8	1.5	1.7	1.6	1.6	1.7	1.35
YDL132W	0.8	1.2	1.1	0.7	1.3	0.9	1.4	1.0	3.8	2.4	1.3	0.7	0.7	2.0	0.9	1.7	1.0	0.9	1.1	0.74
YER014W	1.0	0.9	0.9	0.6	0.8	4.0	1.6	1.2	3.5	1.1	0.9	1.1	1.1	1.5	1.2	2.3	0.8	1.0	0.9	0.43
YER042W	3.0	2.2	3.1	1.0	1.1	1.6	1.1	1.7	6.8	2.1	1.8	1.1	1.1	1.4	5.2	1.0	1.9	0.7	1.1	1.80

YER090W	1.0	1.1	2.0	0.7	1.3	0.7	0.9	1.4	3.7	2.5	1.8	1.3	1.2	1.2	1.5	0.8	1.1	0.9	0.97
YGL026C	0.7	9.3	1.9	0.6	1.2	1.7	0.9	0.8	3.7	1.5	3.4	1.3	1.8	0.9	2.4	0.7	1.5	0.8	0.87
YGL252C	1.1	2.4	1.4	0.7	1.3	0.8	1.4	1.2	2.7	1.7	0.9	0.9	1.2	1.0	1.3	1.2	1.0	1.3	0.91
YGL254W	1.2	1.1	0.8	0.6	1.1	0.7	1.3	1.4	3.1	1.8	1.1	1.2	2.4	1.3	1.1	1.4	0.8	1.2	0.53
YGR276C	0.9	0.8	0.3	1.3	1.5	0.7	1.9	1.5	4.5	2.2	0.9	1.0	1.8	1.0	0.8	1.3	0.9	1.1	0.97
YHR106W	0.9	1.7	1.7	1.5	1.7	1.3	1.2	1.0	2.8	2.5	1.4	0.7	1.0	1.2	0.9	2.4	1.3	1.1	1.73
YIL046W	1.5	2.7	1.6	0.7	1.4	0.9	1.0	1.0	10.7	2.5	1.2	1.0	1.7	1.1	1.3	1.8	9.0	5.8	0.68
YJL071W	1.0	1.5	1.3	1.6	1.4	1.0	1.3	1.1	2.8	2.2	1.3	1.1	1.0	1.0	1.5	1.2	0.9	0.9	0.41
YJR139C	1.4	2.6	2.9	1.1	1.2	1.8	1.3	1.1	4.1	1.9	1.5	1.0	1.5	1.4	0.7	1.2	1.0	1.3	4.47
YKR069W	3.4	6.3	5.0	3.1	0.7	0.5	1.0	1.2	10.9	9.0	2.0	1.4	1.4	1.7	1.1	1.8	1.0	1.0	0.25
YLL061W	3.6	2.8	9.2	0.4	0.8	0.8	0.9	1.4	3.7	5.5	1.7	0.7	0.9	1.3	1.4	1.0	0.6	0.7	0.33
YLR070C	1.0	1.3	1.4	1.1	0.7	1.1	1.3	1.0	3.5	1.6	0.4	0.7	2.0	1.3	0.5	2.1	1.0	0.9	0.31
YLR099C	2.0	2.2	1.4	0.8	0.9	0.4	0.2	1.2	3.6	1.1	1.2	0.9	0.8	0.7	0.9	0.7	0.7	0.5	0.92
YLR157C	1.1	1.1	3.4	1.1	1.3	1.9	1.9	1.5	5.1	1.8	1.9	1.2	1.8	1.1	1.1	2.1	1.6	2.1	1.70
YLR160C	1.2	1.4	3.9	1.1	1.3	1.8	1.9	2.0	4.8	1.8	1.6	1.2	2.0	1.2	1.0	2.0	1.6	2.2	1.59
YLR164W	1.0	2.4	0.3	1.0	1.2	1.2	1.1	1.2	5.3	2.0	3.2	0.7	1.0	1.5	0.7	11.0	1.5	1.2	0.31
YML042W	0.9	1.4	1.5	2.2	1.0	0.9	0.8	1.6	3.8	2.4	2.5	1.0	1.2	1.4	1.7	4.8	1.0	0.9	0.29
YOL049W	0.9	1.1	1.3	0.9	1.4	0.6	1.1	1.0	3.0	1.9	1.8	0.8	0.9	0.9	0.7	1.3	1.0	1.3	1.61
YOL064C	1.4	2.1	1.1	0.6	0.9	1.4	1.2	1.0	8.7	2.7	1.0	0.9	2.0	0.9	1.0	1.7	1.2	1.3	1.32
YOR377W	0.6	0.6	0.6	1.0	1.4	1.6	1.6	1.0	3.8	1.1	1.2	0.9	1.3	0.9	1.2	1.3	1.1	1.1	0.46
YPL031C	0.9	2.0	1.4	0.8	1.5	1.8	1.6	1.0	5.7	1.4	1.4	0.8	1.6	0.9	0.7	2.0	1.4	1.2	0.49
YPL113C	1.4	1.7	0.4	2.4	1.3	1.0	1.9	1.4	5.5	2.0	1.5	1.1	1.7	1.6	0.9	2.5	1.2	1.7	0.28
YPL274W	0.8	4.2	3.8	0.8	0.6	1.1	0.7	0.9	4.1	3.6	2.0	0.5	0.6	0.9	1.5	1.1	0.7	0.6	0.41
YPR048W	1.3	2.0	0.9	1.1	0.9	0.6	0.9	1.5	4.0	2.1	1.0	0.8	0.6	1.2	0.6	0.8	0.7	0.8	0.75
YBR001C	0.9	1.4	1.1	1.4	0.9	1.1	0.9	1.3	2.3	2.1	1.0	1.0	2.0	1.2	1.8	1.4	1.0	1.6	0.61
YBR018C	0.9	1.1	1.9	2.9	0.9	0.7	1.4	0.6	1.3	1.7	5.8	1.0	1.0	2.4	1.3	6.2	0.8	0.9	0.20
YBR204C	1.0	1.0	1.5	1.8	1.1	0.9	1.7	1.1	1.8	1.9	2.2	1.0	1.7	1.4	1.2	2.3	1.1	1.5	0.84
YBR241C	0.9	9.3	2.6	0.9	0.9	1.5	1.4	0.7	29.8	2.2	1.4	1.4	1.4	0.9	1.6	0.7	1.0	1.2	1.25
YCR105W	2.2	1.2	1.2	3.0	0.9	1.0	1.0	1.4	2.0	3.9	2.3	0.9	1.9	1.9	3.1	1.3	1.3	1.1	0.36
YDR287W	1.1	8.4	1.9	1.2	1.2	1.6	1.2	1.2	2.5	1.8	1.5	1.1	1.5	1.2	1.6	2.7	1.5	1.3	0.52
YDR294C	0.7	1.1	1.9	1.2	0.9	0.7	1.0	1.0	2.0	2.9	1.2	1.1	1.6	1.0	2.0	1.7	0.9	1.1	1.02

YER052C	1.1	1.0	3.6	1.1	0.6	0.6	0.5	1.0	2.7	2.4	1.1	0.9	2.1	0.7	1.2	0.2	0.8	0.4	1.54
YFL021W	0.8	1.4	2.4	1.7	1.1	0.8	0.8	0.6	2.7	1.2	1.3	0.9	1.5	1.1	1.3	1.0	0.8	0.5	0.40
YGL040C	0.7	1.2	1.4	0.9	1.3	2.0	1.1	1.0	2.1	1.9	0.9	0.6	1.6	1.3	0.7	1.5	0.7	1.0	1.77
YGL125W	1.0	3.2	4.3	0.7	0.9	0.8	1.7	0.8	2.1	2.1	1.6	1.0	1.4	1.0	1.9	1.2	1.2	1.1	0.27
YGR007W	1.3	1.7	0.7	1.6	0.6	0.8	1.2	1.1	2.2	2.3	0.9	0.8	1.4	1.8	1.9	1.3	1.1	1.4	0.74
YGR155W	1.3	4.4	1.2	0.6	1.3	1.6	1.1	1.4	2.4	1.7	1.3	1.0	1.4	0.7	0.5	1.0	0.5	0.6	4.15
YIL099W	0.9	1.6	1.5	0.4	0.8	8.8	101.4	1.0	2.2	1.8	0.9	0.9	1.4	1.6	5.5	1.2	1.0	1.1	0.18
YIL170W	1.1	1.0	2.5	2.2	0.9	1.7	0.5	1.2	5.7	3.2	1.7	0.7	1.9	1.1	2.3	1.8	1.6	1.5	0.48
YIR031C	0.8	1.6	0.6	0.6	1.6	1.7	1.4	1.0	2.6	1.0	1.2	0.8	1.0	1.2	0.8	0.7	0.9	0.8	0.44
YIR032C	1.1	1.9	1.3	2.6	1.0	0.6	1.0	1.2	2.6	2.3	1.4	1.0	1.4	1.6	0.6	1.6	0.9	1.1	0.40
YJL128C	0.8	1.4	0.4	0.8	1.2	1.3	1.8	0.9	2.0	1.7	0.6	1.0	1.7	0.8	1.2	0.9	1.0	1.0	0.42
YJR090C	0.8	1.0	0.6	0.8	1.2	1.2	0.8	0.8	1.9	1.2	0.4	0.8	2.2	1.0	1.6	0.8	1.1	1.0	0.60
YJR103W	1.1	3.8	1.2	1.6	0.7	0.6	0.6	0.8	1.8	3.0	1.1	0.6	0.7	0.7	3.2	2.3	0.9	1.0	0.74
YJR153W	1.1	1.7	1.1	0.8	0.9	0.4	1.3	0.9	2.4	1.6	2.0	0.7	1.3	1.7	2.9	1.6	0.8	1.0	0.18
YKL192C	1.1	1.0	3.7	1.1	1.1	1.8	1.1	0.9	3.5	1.6	1.1	1.2	1.7	1.5	1.2	2.1	1.0	0.8	1.57
YLR025W	1.2	5.1	0.7	1.1	1.9	1.5	1.7	1.5	2.4	1.5	1.1	0.9	1.0	1.7	1.5	2.2	1.2	1.3	1.15
YNL051W	1.0	1.4	1.8	0.9	1.0	0.7	0.9	0.9	2.0	1.5	1.4	0.7	1.2	1.1	1.4	1.1	0.7	1.0	0.57
YNL099C	0.6	1.0	1.1	1.3	1.0	0.5	1.0	0.7	2.2	1.7	1.6	1.1	1.3	0.9	1.0	1.6	0.7	0.8	0.48
YMR056C	1.1	1.3	1.7	1.0	1.1	0.9	1.4	1.2	1.8	1.1	1.6	0.9	0.9	1.1	0.7	2.4	1.0	1.1	0.72
YNL257C	0.7	1.0	0.9	0.8	0.9	2.0	1.1	1.1	2.1	1.4	1.0	1.1	1.7	0.8	1.0	1.4	0.9	1.3	0.63
YNL264C	1.0	2.4	1.3	1.0	0.8	1.4	1.5	1.1	3.3	1.3	1.0	1.1	1.5	1.2	1.1	1.3	0.7	1.1	0.48
YNR071C	1.4	1.0	0.9	3.2	1.1	0.9	1.4	1.2	3.1	7.0	1.3	0.6	1.7	1.1	1.8	1.0	1.0	0.9	0.16
YOL065C	1.0	1.7	1.6	1.3	0.8	1.3	1.9	1.0	2.1	1.8	1.0	0.8	1.3	1.1	0.7	2.6	1.1	1.5	0.43
YOL067C	0.8	0.9	0.9	1.4	0.7	0.3	0.7	1.0	2.1	1.3	1.3	0.7	1.7	0.7	1.2	1.1	1.4	0.9	0.55
YPL147W	1.0	0.8	2.3	1.2	1.2	1.1	1.0	0.9	2.4	2.4	1.3	0.9	1.5	1.0	2.4	2.5	1.5	3.6	0.33
YDR043C	2.8	1.1	1.2	6.9	1.7	1.4	1.3	1.2	1.0	2.7	1.3	0.9	0.7	1.8	1.2	1.4	1.9	1.2	0.66
YGR180C	3.1	1.1	1.9	1.0	2.0	0.6	0.5	1.0	1.4	1.5	1.0	0.9	0.9	0.9	1.3	1.2	1.0	1.9	3.90
YJL026W	2.5	2.4	2.9	1.0	1.7	1.4	0.5	1.2	1.0	1.1	1.3	1.0	1.2	1.0	1.1	1.6	1.4	2.1	3.74
YGR087C	1.0	15.0	1.7	0.6	1.0	1.1	1.0	0.8	0.2	0.9	0.8	1.2	1.2	0.7	3.5	0.6	1.0	0.6	1.88
YGL256W	0.9	5.3	1.1	1.3	0.7	0.7	0.5	1.0	0.4	1.2	1.0	0.9	0.8	0.9	1.0	0.7	0.7	0.8	0.90
YAL039C	1.1	2.2	1.7	1.0	1.1	0.8	1.0	1.2	1.6	2.2	1.1	1.4	1.6	1.2	3.3	2.2	1.4	1.1	0.39

YJR107W	1.0	3.1	1.5	1.8	0.7	1.5	1.3	1.3	1.4	0.9	1.3	1.1	1.7	1.4	1.1	1.1	1.4	1.3	0.41
YNL142W	0.7	2.4	2.5	0.8	1.3	0.9	1.1	0.8	0.9	0.6	0.9	1.2	0.9	0.8	0.3	1.0	1.0	0.9	0.44
YDL210W	1.2	2.2	2.7	1.1	0.9	1.3	0.8	1.1	1.2	1.4	0.6	0.8	1.2	1.1	1.9	0.9	1.1	0.9	0.20
YGL055W	1.1	1.8	0.3	2.5	1.5	1.6	0.6	1.4	0.2	0.7	0.9	1.3	0.2	0.7	0.5	3.0	1.0	1.5	5.60
YCL025C	1.1	4.6	2.5	1.7	0.9	0.9	0.7	0.7	0.3	0.3	1.0	1.1	0.5	0.7	0.8	0.6	0.6	0.6	1.98
YBR132C	0.9	1.9	2.4	1.8	0.8	1.2	1.1	0.8	0.8	1.1	1.9	1.0	1.4	1.1	1.5	1.3	1.1	1.3	0.43
YHL018W	0.8	1.5	0.5	0.5	0.9	0.4	1.2	0.8	0.8	0.6	1.2	0.7	0.8	1.0	0.9	0.9	1.0	0.9	0.37
YPL038W	0.8	1.5	0.2	1.1	1.4	0.5	1.0	1.2	0.9	0.7	1.1	0.6	0.6	0.9	0.6	0.8	0.9	0.9	0.64
YKR053C	0.9	2.0	1.0	1.2	1.0	1.1	1.7	0.9	0.8	1.8	0.5	0.7	0.7	1.3	0.3	0.9	2.8	2.4	0.35
YNL256W	0.7	1.6	0.6	0.6	1.0	0.5	0.6	0.9	0.8	0.6	0.6	0.6	1.3	0.7	0.9	0.4	0.6	0.6	1.09
YLR377C	1.1	2.6	1.8	1.2	1.0	0.7	0.9	0.7	1.8	1.6	0.6	0.6	1.2	2.9	0.8	2.7	0.9	1.4	0.14
YBR253W	1.3	4.4	0.4	1.1	1.4	1.3	1.4	1.8	1.8	1.5	1.1	1.0	0.8	1.2	0.9	1.3	1.3	1.1	0.96
YBL030C	1.0	0.9	4.5	0.9	0.7	1.1	0.9	0.8	0.4	0.9	1.1	0.9	0.5	0.8	1.8	1.0	1.0	1.1	3.12
YBR221C	0.8	0.7	3.2	1.5	1.3	1.7	1.5	0.8	1.0	1.3	1.2	1.3	1.7	0.8	1.1	1.5	0.9	1.0	3.62
YDR342C	2.8	1.1	12.2	5.7	1.6	1.1	0.8	1.2	0.2	2.2	2.9	1.0	0.6	0.9	0.5	2.4	1.0	2.2	5.23
YDR343C	1.2	1.0	20.6	4.6	1.3	1.3	0.7	1.2	0.3	2.1	2.3	1.0	0.8	0.8	0.5	2.8	1.1	2.3	5.81
YEL034W	0.9	0.6	3.3	0.9	1.4	0.9	0.4	0.9	0.8	1.0	1.1	0.9	0.8	0.9	0.8	0.9	0.9	0.9	5.44
YHR094C	0.7	1.2	5.3	1.6	1.1	1.6	0.8	1.2	0.3	1.2	0.6	0.9	0.7	0.6	2.7	0.9	1.4	1.4	4.82
YIL162W	1.3	1.5	6.8	2.4	1.2	1.0	1.2	1.6	0.8	3.7	2.8	2.0	1.0	1.0	1.5	1.7	0.9	1.4	1.22
YJR105W	0.6	0.7	3.0	0.8	0.7	0.3	0.5	0.8	0.9	0.5	1.0	0.8	0.8	0.5	1.2	0.7	1.1	0.9	3.75
YLR134W	0.8	0.6	2.3	0.8	1.3	2.5	1.1	0.8	0.1	0.7	1.1	1.2	1.5	0.6	1.7	0.5	0.6	0.8	3.47
YLR258W	1.5	1.0	4.2	3.5	0.9	1.8	1.8	0.9	0.8	1.3	1.2	0.9	1.4	1.2	0.6	1.7	1.0	2.0	1.36
YML058W	1.9	1.2	5.8	1.9	0.6	0.6	0.6	0.7	1.1	1.2	3.3	0.9	1.4	1.1	2.5	1.3	1.3	1.5	2.14
YMR083W	1.4	1.7	2.6	1.1	1.5	1.8	1.7	1.1	0.4	1.1	1.6	0.7	0.9	0.8	1.3	1.3	0.9	1.1	2.52
YOR178C	1.4	1.3	4.8	2.3	1.0	2.7	0.9	0.9	0.2	1.7	4.1	1.7	1.0	1.0	1.1	1.7	1.0	1.5	0.56
YPL028W	0.7	0.9	2.6	0.9	1.0	1.2	1.3	0.9	1.2	0.8	1.2	1.4	0.9	0.8	0.6	2.2	1.4	1.8	4.35
YPR113W	1.1	0.8	3.7	1.3	2.0	1.1	1.2	0.9	0.4	0.8	2.0	0.7	0.7	1.3	1.0	2.3	1.2	1.9	2.85
YPR183W	0.9	1.5	3.5	0.8	0.9	1.2	1.2	1.0	0.9	0.6	2.5	1.2	1.6	0.7	0.9	0.8	1.2	1.0	1.17
YBR011C	1.3	1.8	2.5	1.1	0.9	2.0	1.1	1.3	2.2	1.0	1.7	1.1	1.5	0.9	2.1	1.7	0.8	1.1	3.68
YCR034W	0.8	0.4	2.5	0.9	0.9	0.3	0.3	0.9	0.1	0.2	0.8	0.5	0.2	0.6	0.9	0.3	0.9	0.7	3.77
YDR050C	1.6	1.3	2.3	1.8	0.9	1.7	1.5	1.3	0.4	1.3	2.0	1.4	2.0	1.2	1.9	1.3	1.1	2.3	6.26

YDR178W	2.0	2.0	3.4	2.2	0.9	2.1	0.6	0.9	0.9	0.8	2.0	1.3	1.5	1.5	0.7	3.0	1.2	2.3	2.27
YDR284C	0.8	1.5	3.0	2.9	0.8	1.8	1.4	0.9	0.9	1.0	1.3	0.9	1.2	1.3	0.9	1.7	1.5	1.5	1.44
YDR345C	0.8	0.9	5.6	2.6	1.3	1.2	1.1	1.2	0.2	1.1	1.5	1.4	1.2	0.8	0.8	1.0	1.3	1.8	5.65
YDR400W	1.0	2.0	2.2	0.7	1.0	1.1	0.6	1.4	1.1	1.4	1.3	0.4	0.7	0.9	0.8	1.1	1.1	0.8	0.56
YEL063C	0.7	0.8	2.4	1.3	1.2	1.3	0.7	0.6	0.8	1.7	0.8	1.1	1.1	0.8	1.3	1.0	0.7	0.7	1.12
YER081W	1.6	1.9	2.7	1.4	1.1	1.1	0.5	0.6	1.8	1.1	1.1	1.0	0.6	1.6	0.5	0.8	1.1	1.7	2.31
YER120W	0.9	1.1	2.5	0.8	0.8	1.5	0.9	0.6	0.8	0.9	1.1	1.3	1.0	0.9	1.5	1.0	1.2	1.0	1.52
YFL011W	1.2	0.7	3.7	3.3	1.3	1.0	0.8	0.8	0.3	1.6	2.1	0.9	0.8	0.8	1.7	1.2	0.8	1.0	1.25
YGL012W	1.0	0.8	3.0	1.2	1.5	1.6	0.9	0.8	0.3	0.9	0.6	0.6	0.3	0.8	0.6	1.2	0.9	1.1	4.88
YGR191W	0.8	0.7	1.6	1.5	0.8	1.1	0.7	0.7	0.1	0.7	1.6	0.7	1.0	0.7	1.5	0.7	0.8	0.8	1.58
YGR204W	0.5	1.1	2.7	1.3	0.6	0.6	0.8	0.4	0.9	2.3	2.1	1.0	1.3	0.5	1.6	0.6	1.0	0.7	1.49
YHR025W	0.6	0.8	2.4	0.6	0.9	0.8	0.8	0.8	0.2	0.4	2.1	0.9	0.7	0.6	2.1	0.5	1.0	0.6	0.68
YHR123W	0.7	1.2	1.8	1.0		1.0	0.9	0.8	0.8	1.1	1.2	0.7	1.5	0.8	2.3	0.5	1.1	1.0	0.85
YJL121C	1.0	0.5	1.9	0.8	1.0	1.1	0.7	1.0	0.1	0.4	1.1	0.6	0.7	0.9	1.0	0.6	1.1	1.0	1.00
YJR077C	1.1	1.1	2.0	1.6	0.9	0.9	0.7	0.8	0.4	0.7	1.6	1.0	0.9	0.7	1.5	0.7	1.0	0.8	1.79
YJR143C	0.6	0.6	2.1	0.8	1.6	0.6	0.5	0.7	0.1	0.3	1.3	0.6	0.3	0.6	1.1	0.5	0.7	0.8	3.24
YKL060C	1.6	0.8	2.5	1.0	1.6	1.3	1.2	1.1	0.3	0.8	2.1	1.3	1.2	0.8	1.6	1.5	1.2	1.7	6.01
YKL148C	0.9	0.8	3.7	0.7	0.8	0.5	0.6	0.8	1.7	1.7	1.5	0.8	0.8	0.8	0.6	1.1	0.8	1.0	0.54
YKL157W	0.7	1.0	2.3	1.3	1.5	1.5	1.9	1.1	1.7	1.9	1.5	1.0	2.3	0.8	1.2	1.7	1.2	1.5	1.22
YLR044C	0.8	0.6	2.2	0.9	1.7	1.5	1.3	0.7	0.0	1.2	1.1	1.4	1.7	0.5	2.2	0.6	0.9	0.9	5.16
YLR056W	1.0	0.6	2.5	0.8	1.6	1.2	0.8	0.9	0.0	0.5	0.8	0.9	0.2	0.7	0.9	2.1	1.1	1.1	3.61
YLR058C	0.9	0.8	5.5	2.6	0.7	0.9	0.5	0.3	0.2	0.1	2.6	0.4	0.3	0.7	1.5	0.4	0.8	0.8	2.71
YLR081W	1.3	0.8	2.8	3.6	1.0	0.9	0.7	0.9	0.1	2.2	2.6	1.0	0.6	1.0	0.7	1.2	0.7	0.9	1.46
YLR089C	0.9	1.2	2.1	0.9	0.8	1.5	1.6	0.7	0.5	0.8	1.7	0.6	1.0	0.7	1.7	1.4	1.2	1.3	1.27
YLR284C	0.9	1.0	3.8	1.9	1.6	0.9	0.8	1.2	0.9	0.9	1.5	0.6	0.8	1.3	1.0	4.5	2.9	8.1	0.84
YLR304C	0.7	0.6	5.0	0.7	0.6	1.9	0.6	0.6	0.1	2.2	1.6	1.0	0.5	0.7	1.6	1.8	0.5	0.7	2.39
YLR354C	1.1	2.5	2.3	1.5	1.6	1.5	1.1	1.4	0.4	0.9	1.7	1.2	1.0	0.9	2.4	1.3	1.0	1.5	4.53
YLR372W	0.7	0.3	1.7	0.8	1.4	0.5	0.2	0.9	0.0	0.1	0.9	0.6	0.1	0.6	0.7	0.2	0.5	0.6	4.46
YML022W	0.9	0.6	2.0	1.1	1.3	0.8	0.6	1.1	0.3	0.6	1.2	0.6	0.2	0.9	0.6	0.6	0.5	0.7	4.93
YMR011W	1.3	1.0	9.4	5.5	0.9	0.6	0.8	1.1	0.0	0.7	1.5	0.8	0.4	0.6	0.6	1.2	1.3	1.6	4.95
YMR015C	0.7	0.7	1.9	0.9	1.7	1.3	0.4	0.7	0.1	0.3	1.0	0.9	0.4	0.8	1.2	1.5	1.0	1.0	2.51

YMR205C	0.5	0.7	2.3	0.8	1.2	1.2	0.9	0.7	0.3	0.8	1.0	1.1	1.3	0.5	0.9	0.9	0.6	0.5	4.75
YMR261C	0.7	1.6	3.6	0.8	0.9	0.6	1.3	0.7	1.6	1.3	0.8	0.9	1.6	0.6	0.8	1.6	0.7	1.1	0.78
YMR323W	0.8	1.1	2.9	1.1	0.7	0.4	1.1	0.8	0.5	1.3	2.5	1.2	1.8	1.2	37.3	0.6	1.1	0.6	1.04
YOL086C	1.1	0.5	2.2	1.1	1.9	1.7	1.9	0.8	0.1	1.2	2.6	1.3	1.7	0.6	1.6	1.4	1.1	1.3	4.19
YOL156W	1.1	0.7	2.5	1.1	1.2	1.2	1.0	1.0	2.3	2.1	1.1	0.9	1.7	0.9	1.9	0.9	0.9	0.9	0.53
YOR002W	0.8	1.1	1.9	0.9	1.1	1.1	1.0	0.9	0.8	0.9	1.2	0.5	0.6	0.9	1.5	0.8	0.9	1.1	1.49
YOR085W	0.7	0.8	1.9	1.0	1.0	0.6	0.6	0.7	0.5	0.6	1.1	0.8	1.0	0.7	1.8	0.8	0.9	0.9	1.86
YOR108W	0.8	0.9	2.3	0.6	1.1	1.6	1.2	0.9	0.4	1.1	1.4	0.7	1.3	0.9	0.7	1.0	1.1	1.1	1.07
YOR128C	0.9	0.7	2.1	2.1	1.1	1.0	0.7	0.6	0.3	0.4	0.8	0.5	0.4	0.7	1.6	0.5	1.2	1.2	2.14
YOR142W	1.0	1.2	3.4	1.0	1.4	1.6	1.0	0.8	1.1	1.5	1.5	0.8	1.4	0.8	1.1	0.8	0.9	1.0	1.31
YOR176W	0.7	2.6	2.7	0.9	1.0	0.9	0.5	1.0	1.0	0.5	1.4	1.3	1.5	0.8	0.8	1.4	1.2	2.1	1.23
YPL057C	1.9	1.1	3.2	3.1	1.9	0.6	0.6	1.0	0.4	1.4	1.6	1.0	1.3	0.7	1.1	2.5	2.2	2.0	2.08
YPL135W	0.9	1.2	2.5	1.2	1.6	1.3	1.2	1.0	0.5	2.8	1.3	1.1	1.2	1.1	1.5	1.2	1.5	1.7	1.50
YCR010C	1.6	1.6	1.6	4.2	1.7	1.3	1.3	0.8	0.9	4.7	1.1	0.8	1.0	1.2	1.2	2.8	1.9	1.5	0.26
YBR003W	0.9	0.8	1.0	1.9	0.7	1.2	1.1	0.9	1.0	1.3	1.3	0.8	1.2	0.8	0.7	2.0	1.1	1.3	1.06
YBR020W	1.0	0.5	1.9	1.9	1.0	0.8	0.7	1.0	-0.4	1.1	1.0	0.8	1.1	1.0	1.3	0.7	0.8	0.9	0.27
YDR123C	1.2	0.8	0.4	2.1	1.6	0.7	0.9	1.3	0.5	0.6	0.6	0.5	0.9	0.7	1.2	0.8	1.3	1.0	0.30
YDR277C	1.6	1.2	1.0	3.0	0.8	1.1	1.2	1.7	0.2	0.9	1.2	0.9	1.2	1.3	0.4	2.3	1.2	1.7	0.89
YDR408C	1.0	1.0	1.4	4.1	0.9	0.9	0.8	0.7	0.3	0.5	1.7	0.6	0.5	0.9	1.0	1.0	1.1	1.1	2.16
YDR483W	1.1	1.0	1.3	2.0	0.7	1.5	0.8	1.0	0.4	1.1	1.4	0.8	1.3	0.8	1.5	1.2	1.2	1.4	3.24
YGL115W	0.9	0.6	1.2	2.0	1.2	1.2	1.4	1.0	1.2	1.2	1.0	0.9	0.7	1.2	0.7	1.7	0.8	1.2	2.46
YGR096W	1.5	1.0	1.1	4.6	1.2	1.7	0.9	1.0	0.8	0.8	0.8	0.8	1.1	1.2	0.9	0.8	0.8	1.0	0.49
YGR288W	0.9	0.5	1.0	2.6	0.8	0.8	1.4	1.0	1.6	2.6	1.3	0.9	1.3	1.1	0.8	1.7	1.2	1.3	0.41
YHR210C	1.3	1.0	0.6	5.2	1.8	0.7	1.9	1.3	-0.1	0.9	1.5	0.5	0.4	1.0	0.5	1.5	1.4	1.2	0.33
YIL006W	1.0	1.1	1.4	2.9	0.8	0.3	0.8	0.6	0.9	1.1	1.0	0.9	0.8	1.0	1.5	1.7	0.8	0.9	0.28
YKR034W	0.9	1.5	1.1	4.7	0.9	0.9	0.7	1.5	0.5	0.6	0.0	0.7	1.2	1.1	1.7	0.6	0.8	1.0	0.26
YLR006C	0.7	0.7	0.9	6.2	1.6	0.9	1.1	0.9	1.1	1.1	1.5	0.7	0.8	1.0	0.9	0.8	1.6	1.0	0.40
YNL025C	0.9	1.4	1.4	12.8	0.7	0.5	1.2	1.0	1.1	1.8	1.1	0.8	1.3	1.2	1.4	2.9	0.7	1.3	0.37
YOL116W	1.1	1.0	0.9	2.8	1.7	0.7	1.5	1.3	0.6	1.8	1.0	0.6	0.8	0.9	0.7	1.9	1.1	1.4	0.47
YOR103C	1.1	0.8	1.3	1.8	1.5	1.0	1.2	1.0	0.8	0.9	1.0	1.2	0.8	1.2	1.4	1.3	1.1	1.5	2.84
YOR251C	1.1	1.0	1.3	1.8	0.8	0.9	1.0	1.1	0.8	0.8	1.0	0.9	1.0	1.1	0.6	1.2	0.9	1.3	1.34

YOR348C	1.1	0.7	1.2	2.0	0.9	0.7	1.1	0.7	1.1	1.2	1.6	1.7	0.9	0.9	0.18
YPL148C	1.2	0.8	0.9	2.3	1.1	0.6	3.5	0.7	0.6	1.6	0.6	1.6	1.0	1.1	0.48
YGL205W	0.9	0.9	0.7	0.8	1.1	1.6	0.4	1.1	1.0	1.0	2.0	4.1	3.9	9.1	0.24
YNL192W	1.1	1.2	1.5	1.6	0.9	0.6	1.8	1.1	2.7	0.7	2.1	0.8	2.3	2.8	1.31
YOL108C	1.4	1.5	0.4	1.9	2.1	0.9	1.1	1.0	1.3	0.9	1.5	1.8	1.5	2.7	0.87
YPR165W	1.3	0.7	1.6	1.0	1.5	1.8	0.7	0.8	1.0	1.0	0.9	1.0	2.3	2.7	3.64
YDR073W	1.7	0.9	0.7	1.4	1.2	1.3	1.2	0.8	0.6	1.2	0.8	1.6	1.8	2.3	1.27
YER015W	0.7	0.9	1.1	1.5	1.3	0.9	0.9	0.9	0.8	1.1	0.8	3.0	1.6	2.6	0.41
YJL167W	0.9	1.4	1.4	1.1	0.7	1.3	0.9	1.3	0.9	0.9	1.6	1.4	1.4	2.1	2.94
YJL216C	0.8	4.7	2.2	0.9	0.8	1.5	1.3	1.0	1.1	1.1	1.2	1.5	1.2	2.0	0.25
YKR009C	1.0	1.2	1.5	0.9	1.0	1.8	1.2	1.0	1.8	1.0	1.0	4.6	1.9	2.5	0.27
YOR180C	0.8	1.1	1.0	1.0	1.0	0.7	0.4	0.8	0.9	1.0	1.1	2.4	0.9	2.3	0.55
YBR036C	0.8	1.7	1.8	1.2	1.2	1.3	1.0	1.0	1.9	0.8	1.5	1.6	2.1	1.8	2.05
YDR297W	1.5	0.8	0.8	1.1	0.9	1.4	0.7	1.4	0.8	0.9	1.4	1.4	1.9	1.9	1.73
YDR387C	0.8	0.9	1.2	2.2	0.9	1.2	2.0	0.9	1.3	0.9	1.4	2.7	1.2	1.1	0.86
YOL096C	1.1	1.0	1.2	1.6	1.2	1.3	1.4	1.2	1.4	1.4	1.0	2.3	1.2	1.2	0.64
YPR184W	1.2	1.4	5.7	2.2	0.9	1.5	3.2	3.6	2.5	1.3	1.5	3.1	1.0	1.7	0.37
YBR298C	1.1	1.0	1.6	2.3	1.4	0.4	1.1	1.5	0.8	0.9	0.2	2.1	0.9	0.8	0.88
YDL078C	0.7	1.1	1.2	0.8	1.3	1.1	1.0	1.7	1.0	0.8	0.5	2.2	1.1	2.0	1.65
YDL215C	1.0	1.5	1.0	1.6	1.5	0.9	2.4	0.8	1.5	1.0	1.1	2.2	1.1	1.6	0.91
YGL035C	0.7	1.4	4.3	1.4	1.1	0.6	1.5	1.3	1.1	1.1	1.0	2.3	0.9	1.2	0.61
YGR287C	1.3	1.0	1.3	1.5	0.8	0.8	4.2	1.5	1.7	1.1	2.3	3.0	1.0	1.1	0.38
YJL070C	1.3	0.9	1.1	1.2	1.3	2.0	1.1	1.3	1.8	1.3	3.5	2.2	1.1	1.2	0.34
YLR351C	1.0	1.4	1.3	1.5	1.3	1.4	1.2	1.1	0.9	1.4	1.2	2.0	1.3	1.8	1.75
YLR375W	0.9	1.5	0.9	0.9	1.0	1.3	1.2	1.6	1.6	0.9	1.3	2.2	1.0	1.0	1.05
YMR267W	0.8	1.8	0.7	0.9	1.0	1.4	0.8	1.0	0.7	1.0	0.9	2.6	0.9	1.3	0.94
YMR278W	0.7	1.7	1.4	1.0	1.2	1.3	1.7	1.1	2.5	0.8	1.8	2.5	1.0	1.5	0.62
YMR293C	0.9	1.5	1.6	2.2	0.6	0.5	1.3	0.4	0.8	1.3	0.7	2.2	0.8	1.0	0.37
YNR072W	1.1	1.5	0.5	0.7	1.0	0.9	1.8	1.4	1.5	1.0	1.8	2.1	1.3	1.0	0.26
YOR363C	0.8	2.0	0.9	1.3	0.7	1.2	1.6	1.2	1.3	0.9	1.1	2.1	1.3	1.8	0.40

酵母遺伝子
表8 脱毒性タンパク質遺伝子
化学物質存在下の発現mRNA／不存在下の発現mRNA

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	強度
YDR453C	1.1	2.7	4.4	3.0	0.7	1.7	1.0	1.3	4.5	6.1	2.3	0.9	1.4	3.8	2.3	5.6	1.0	1.5	1.53
YLL060C	12.5	4.2	2.3	2.6	0.9	1.4	2.0	5.8	13.0	23.2	14.1	1.1	1.8	10.6	1.5	3.6	1.9	2.3	0.57
YBL064C	2.6	2.8	3.9	1.7	0.8	5.2	2.5	2.4	4.5	3.8	2.9	1.7	4.1	5.0	1.3	5.0	1.2	2.3	1.67
YBR008C	3.0	2.4	4.9	0.7	0.9	1.0	0.9	2.8	54.6	21.1	9.4	0.8	2.0	4.1	0.8	3.1	2.0	1.2	0.37
YOR153W	1.6	0.9	5.1	1.1	1.0	7.4	2.6	0.5	3.2	1.2	1.0	4.0	11.8	0.3	3.6	1.6	2.5	3.1	1.91
YHL047C	0.6	4.4	1.0	1.0	1.2	8.4	16.8	1.5	1.2	11.9	1.0	2.6	3.8	0.5	1.1	2.3	1.2	1.2	0.74
YCL035C	2.0	2.3	1.5	1.7	1.5	5.1	2.7	1.4	1.9	2.3	2.1	1.5	2.8	2.5	1.9	5.5	2.6	4.2	1.74
YGR197C	1.1	2.4	2.5	1.0	0.7	0.5	1.3	0.8	16.7	3.2	1.1	1.2	2.4	1.5	1.0	1.5	1.7	1.9	0.37
YHR055C	4.4	1.8	0.8	1.2	2.7	1.6	1.1	2.1	3.9	3.3	1.8	1.2	3.0	1.5	0.5	0.8	0.9	0.6	3.96
YNL239W	1.0	2.4	2.4	1.2	1.2	1.8	2.1	1.3	2.5	6.0	1.9	1.5	3.6	1.3	1.7	1.5	1.1	1.4	0.68
YNL241C	1.3	2.5	4.3	1.0	0.8	0.9	3.2	0.9	3.4	7.4	3.0	2.0	4.9	1.1	7.0	2.8	1.0	1.0	0.68
YBR293W	1.9	3.1	1.0	1.8	0.8	0.9	0.9	0.9	5.5	2.4	1.1	1.0	3.0	1.4	3.1	1.6	1.0	0.9	0.94
YDL100C	1.0	1.2	1.1	0.8	1.0	2.1	1.6	1.7	5.4	3.2	2.8	1.5	2.5	1.4	1.0	1.3	1.2	1.4	2.60
YER185W	2.0	3.1	2.1	7.0	1.6	1.2	1.1	1.0	2.9	1.2	1.6	1.1	2.1	1.6	1.7	0.6	2.6	1.1	0.26
YGL013C	0.9	1.2	0.8	0.7	1.1	2.3	0.9	1.4	3.0	1.5	0.9	1.0	2.3	0.8	1.0	0.9	1.1	1.0	0.43
YHR053C	3.5	2.1	0.7	1.1	2.9	1.3	1.2	2.2	4.5	2.9	1.4	1.1	1.9	1.5	0.3	0.7	1.0	0.5	3.99
YIR038C	1.3	3.5	4.6	2.0	0.7	2.5	2.0	1.3	4.6	4.5	3.4	1.1	2.5	2.5	1.2	6.0	2.8	2.0	1.11
YKL026C	2.7	2.0	1.2	4.9	1.0	1.8	2.5	1.8	7.5	3.0	3.0	1.0	2.3	1.8	0.8	6.6	1.6	3.3	0.61
YLL028W	0.6	0.9	4.6	0.5	0.9	1.7	1.0	0.7	1.2	2.3	0.7	1.3	4.1	0.7	3.1	0.6	1.2	1.2	1.02
YOR273C	0.7	1.0	1.7	1.0	1.1	0.4	0.4	0.6	0.6	0.5	1.5	0.8	2.6	0.5	0.8	0.6	3.2	3.1	1.20
YGR138C	1.1	1.6	1.0	1.2	0.8	0.8	0.7	1.0	0.5	1.0	0.7	0.6	0.6	0.9	4.5	0.7	0.7	0.7	1.24
YOR247W	1.7	0.6	3.6	1.4	0.6	0.2	0.5	0.7	0.1	0.4	2.9	0.6	0.3	0.4	7.3	0.2	1.2	0.9	2.23
YPL163C	0.6	0.7	1.4	0.9	0.6	0.6	0.4	0.5	0.1	0.4	0.5	0.9	0.4	0.6	5.3	0.6	1.4	1.4	1.05
YHL040C	1.6	4.4	1.5	0.4	1.1	7.3	4.0	1.5	1.1	11.3	1.7	2.0	2.0	1.1	3.4	1.0	1.4	1.0	0.69
YEL065W	0.3	3.8	1.2	0.4	1.4	2.3	4.3	0.9	0.1	4.9	0.6	1.7	0.8	0.4	2.2	2.6	0.7	0.6	2.10
YIR002C	0.8	1.1	0.5	0.6	1.2	2.2	1.3	1.2	1.7	1.4	0.8	1.3	1.2	1.1	1.1	1.4	1.1	1.2	0.58
YNL259C	1.6	4.5	1.1	1.2	1.1	3.9	3.8	1.5	1.6	2.1	1.6	0.7	1.1	1.4	0.7	1.7	2.6	2.4	1.22
YBR145W	1.5	0.7	2.8	0.9	1.1	11.5	58.8	1.0	0.1	1.1	1.1	1.0	2.0	2.2	1.2	3.6	1.7	2.0	2.17
YLR043C	1.4	1.4	2.0	1.8	2.0	1.4	2.6	1.1	2.8	2.5	1.4	0.8	2.0	2.1	0.5	1.8	1.5	2.2	2.12

YGR209C	1.6	3.1	3.5	1.5	1.9	1.9	1.7	1.6	2.4	6.3	3.1	0.9	1.4	5.0	1.3	1.9	1.3	2.4	3.17
YDL168W	2.3	2.0	2.1	0.9	1.2	1.4	1.1	1.7	8.2	4.7	1.9	0.6	1.3	1.6	1.2	1.1	0.9	0.8	1.08
YDR513W	2.2	2.5	2.3	2.6	0.9	2.1	1.6	1.6	4.6	3.1	2.0	0.9	1.8	2.0	1.3	3.8	1.3	3.2	3.10
YGR088W	1.3	1.2	7.7	2.4	1.0	1.3	0.8	0.8	1.5	3.2	3.9	1.1	1.2	1.3	0.7	5.6	0.9	2.0	0.75
YHR048W	2.5	1.4	1.4	1.7	1.0	0.8	0.8	1.9	4.5	2.7	2.0	0.9	1.1	1.7	0.9	1.4	0.7	0.9	0.26
YJL101C	2.1	1.9	2.1	1.2	1.4	1.0	1.0	1.3	3.1	3.6	2.7	0.7	1.0	1.0	0.5	1.3	0.9	1.0	1.13
YML116W	4.1	1.3	1.5	1.4	1.2	0.9	1.4	2.2	1.4	3.1	4.3	0.5	0.8	2.0	1.9	1.0	1.0	1.0	0.94
YMR038C	1.9	1.7	1.8	0.8	1.5	1.0	1.1	1.9	2.4	2.6	2.7	0.9	1.7	1.1	0.6	1.5	1.2	1.3	1.76
YBR244W	0.6	1.4	2.0	0.9	1.7	1.0	0.6	1.0	1.4	3.0	1.5	0.5	0.4	3.7	0.4	0.7	1.2	1.2	3.42
YCL069W	0.9	15.7	0.9	0.8	0.9		1.4	1.3	1.2	6.9	1.0	0.9	0.8	1.3	1.4	0.9	1.0	1.0	0.25
YKR105C	0.8	0.9	0.9	1.5	1.0	1.2	1.0	1.3	1.0	5.2	0.0	0.8	2.5	1.2	1.5	0.7	0.8	1.0	0.26
YOL158C	0.7	4.0	2.4	0.9	1.2	2.0	1.6	0.7	1.7	6.1	0.7	0.9	1.4	1.0	0.9	1.2	1.4	1.7	1.30
YDR256C	0.8	1.4	0.7	1.3	1.2	0.5	0.6	0.8	5.2	2.0	1.4	0.8	1.1	1.6	1.0	4.3	1.0	2.0	0.30
YGL254W	1.2	1.1	0.8	0.6	1.1	0.7	1.3	1.4	3.1	1.8	1.1	1.2	2.4	1.3	1.1	1.4	0.8	1.2	0.53
YKL064W	0.6	0.9	0.4	0.8	1.2	1.5	1.1	0.9	2.4	1.6	0.7	0.7	1.6	1.1	0.7	1.4	1.3	1.3	0.60
YLL057C	2.2	59.9	1.8	0.9	1.1	1.0	1.6	1.4	121.8	2.9	1.3	0.7	1.4	1.1	1.4	0.9	3.0	1.3	0.19
YPR200C	47.7	1.7	0.8	5.0	1.6	0.8	1.3	1.4	4.7	3.8	2.0	0.4	0.6	2.0	0.7	1.2	1.1	1.0	0.27
YJR104C	1.4	1.8	2.9	1.2	1.5	1.4	1.1	1.5	1.9	2.8	2.6	0.9	0.9	2.0	1.3	2.9	0.9	1.1	3.50
YKR106W	1.3	0.8	2.1	1.4	1.2	1.6	0.9	1.3	10.5	7.4	1.8	0.8	1.4	1.7		2.8	0.9	0.8	0.16
YOR031W	2.6	1.7	1.3	3.4	1.4	0.9	1.3	0.9	0.7	1.3	1.2	0.8	1.8	1.5	1.4	6.2	1.7	2.4	0.52
YHR008C	1.3	6.9	4.8	1.8	0.6	1.0	0.7	0.9	1.7	2.4	2.1	0.7	1.2	1.6	1.7	2.2	0.9	1.0	1.04
YML028W	1.0	2.2	4.4	1.3	1.6	1.2	0.8	0.8	0.8	1.8	1.0	1.6	1.6	2.0	2.2	1.3	1.1	1.5	4.85
YEL027W	1.2	0.6	3.4	1.1	1.0	1.1	0.8	0.9	0.9	1.1	0.9	0.9	0.7	1.4	1.5	1.6	1.0	1.4	4.75
YKR066C	0.9	1.4	5.5	0.7	1.0	0.9	0.5	0.7	0.7	2.4	1.3	0.9	0.6	1.5	0.6	1.3	0.9	1.1	1.25
YDR538W	0.9	1.1	2.4	1.2	1.0	1.0	1.2	1.0	0.3	0.8	0.9	0.7	0.7	0.9	1.0	0.9	1.0	0.9	0.53
YMR015C	0.7	0.7	1.9	0.9	1.7	1.3	0.4	0.7	0.1	0.3	1.0	0.9	0.4	0.8	1.2	1.5	1.0	1.0	2.51
YOR251C	1.1	1.0	1.3	1.8	0.8	0.9	1.0	1.1	0.8	0.8	1.0	0.9	1.0	1.1	0.6	1.2	0.9	1.3	1.34
YLR046C	0.7	1.7	0.9	0.8	1.0	3.8	1.5	0.5	1.0	1.4	0.9	0.8	1.2	1.3	0.8	1.3	5.2	5.4	0.86
YGR224W	0.9	1.2	1.2	1.2	1.4	0.8	0.4	0.6	0.9	0.9	0.8	0.6	0.8	0.9	1.1	1.0	2.8	1.3	0.27
YFL050C	0.7	1.0	1.1	2.2	1.0	0.9	0.8	0.9	0.5	1.6	1.2	0.9	1.2	1.0	1.4	2.3	0.8	1.0	0.36
YCR083W	1.1	2.8	1.5	1.8	1.6	2.4	1.8	1.5	1.8	1.8	1.8	1.1	1.8	2.4	1.0	3.1	1.3	1.3	0.98

表9 その他のカテゴリーに属する遺伝子
化学物質存在下の発現mRNA/不存在下の発現mRNA

酵母遺伝子	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	強度
YKR076W	5.0	2.6	3.5	2.2	1.0	4.7	4.9	6.2	43.4	43.1	18.6	1.5	5.1	14.7	3.2	9.6	1.8	2.7	0.27
YNL335W	1.2	0.7	1.5	2.3	1.5	1.6	1.3	1.7	1.6	5.3	1.1	0.8	0.9	4.6	1.7	1.0	1.2	1.1	0.22
YBR173C	1.1	2.4	3.4	1.6	0.7	1.3	1.6	1.2	6.0	5.1	2.5	1.7	3.8	3.0	15.4	2.1	0.9	1.6	1.15
YFL022C	0.8	0.9	1.5	0.6	0.7	0.9	0.3	0.8	0.5	0.5	1.2	0.6	0.6	3.1	1.1	1.3	0.9	0.8	1.07
YGL158W	1.1	2.8	1.9	12.9	1.0	0.4	1.3	1.3	-0.4	0.9	0.2	1.3	1.0	2.3	2.3	8.2	0.8	1.1	0.18
YHR139C	3.0	4.6	6.8	9.3	1.3	1.9	1.5	1.3	107.2	46.6	3.5	1.6	7.0	2.5	1.9	17.1	1.4	1.3	0.34
YGR213C	5.4	2.9	1.0	6.8	1.2	4.1	7.0	2.0	7.5	6.9	1.6	10.6	30.4	1.0	6.5	5.2	12.8	8.5	0.22
YKL165C	0.5	2.0	1.1	0.6	0.9	0.6	2.1	1.5	0.4	0.4	0.3	2.4	3.2	0.8	2.1	1.2	0.9	1.0	1.08
YBL005W-A	1.0	0.9	0.5	0.9	1.3	1.2	1.4	1.0	0.8	1.5	0.8	1.6	2.9	1.4	0.9	1.1	1.3	1.0	0.48
YBL041W	1.2	1.4	0.9	1.0	1.6	1.7	1.6	1.7	2.8	2.6	1.6	1.6	2.6	2.0	1.3	2.3	1.3	2.0	3.03
YBL078C	2.3	2.7	1.3	2.6	0.7	2.4	3.1	1.6	12.3	15.2	4.6	3.1	5.0	3.6	2.5	4.4	1.8	2.8	0.65
YCL020W	1.1	2.5	0.5	1.1	0.5	1.0	1.5	1.7	0.9	2.4	1.3	1.5	3.0	1.7	2.5	1.3	0.9	1.3	1.46
YDL007W	0.8	1.4	1.3	0.9	1.0	1.1	1.2	1.4	3.8	2.4	1.3	1.1	2.4	1.4	1.4	0.8	0.8	1.5	2.43
YDL097C	0.9	1.7	0.9	1.2	0.8	1.3	1.6	1.5	4.5	2.3	1.5	1.3	4.0	1.4	1.1	1.1	1.0	1.3	2.06
YDL126C	0.5	1.4	2.3	0.7	0.9	1.2	1.5	0.8	2.7	2.0	1.4	1.3	4.3	0.6	1.7	0.7	0.9	0.9	3.24
YER012W	1.4	1.2	1.2	1.0	1.9	2.4	2.4	1.8	6.7	2.7	1.9	1.5	2.9	4.6	1.7	2.2	1.5	1.3	1.84
YFR010W	1.1	1.1	0.8	1.2	0.9	1.3	1.4	1.6	4.3	3.4	1.5	1.2	3.7	1.1	1.5	1.3	0.9	1.4	1.89
YFR024C	0.8	25.0	2.3	1.1	0.7	1.4	3.0	0.9	5.3	4.1	1.9	1.5	2.8	1.2	0.9	1.9	1.0	1.4	1.06
YGL048C	1.0	1.3	0.7	1.3	1.8	1.5	2.0	1.5	2.4	2.1	1.5	1.3	2.5	1.2	1.0	1.6	1.4	2.0	3.07
YGL141W	0.8	1.2	1.1	0.7	1.4	3.0	1.7	0.8	4.5	1.9	0.6	1.4	3.6	1.2	1.5	1.2	1.4	1.2	0.44
YGL180W	1.3	1.3	1.7	0.6	1.2	1.1	2.4	1.2	7.2	3.7	1.3	1.4	2.6	1.0	1.3	1.7	1.0	1.1	0.28
YGR048W	0.7	2.7	1.4	1.3	1.0	1.0	1.9	1.4	4.4	3.1	1.1	1.1	2.5	1.3	0.8	1.1	0.9	1.2	0.93
YGR135W	1.0	1.0	1.0	1.1	1.6	1.5	2.2	1.8	1.5	2.3	1.6	1.2	2.8	2.6	1.5	1.5	1.0	1.9	3.10
YGR201C	1.7	11.9	2.4	2.0	0.8	3.1	2.6	1.6	5.4	3.5	1.6	1.9	8.6	1.6	0.5	14.4	1.4	2.1	0.60
YHL030W	0.5	0.8	1.0	0.7	0.7	1.9	0.9	0.8	2.7	2.5	1.1	1.1	3.8	1.0	2.0	0.5	0.8	0.9	0.66
YHR166C	0.9	1.1	1.0	0.7	1.0	1.8	1.5	1.0	2.6	1.2	0.6	1.7	6.9	1.2	0.9	1.1	1.4	1.5	1.35
YJR069C	0.8	0.8	0.9	0.6	0.9	1.2	1.3	0.9	0.7	0.6	0.9	1.1	3.9	0.6	0.4	0.8	1.0	0.9	1.73
YKL073W	0.6	1.4	0.5	0.6	1.2	0.5	2.1	1.6	1.3	1.1	0.5	1.5	3.3	0.7	1.6	1.0	1.2	1.5	1.29
YKL103C	1.6	4.1	2.5	2.1	0.9	2.7	2.8	1.6	8.3	9.9	2.8	1.3	3.8	2.0	2.1	1.2	1.9	2.2	0.56

YLR080W	1.0	1.4	1.2	1.7	1.1	2.5	2.8	1.3	2.3	1.5	1.9	0.8	3.6	1.2	0.7	3.0	1.6	2.2	0.41
YLR107W	1.2	0.9	0.5	1.2	1.7	2.3	1.6	1.1	1.8	1.2	0.8	1.0	2.9	1.6	1.1	1.6	1.8	2.4	0.94
YLR121C	1.7	1.7	1.1	1.2	1.0	1.6		1.3	2.2	2.0	2.2	1.1	4.0	1.2	10.7	1.5	2.7	1.4	0.30
YLR336C	0.6	0.8	0.7	0.4	0.9	0.8	1.8	1.0	-0.3	0.5	0.5	1.9	4.6	0.6	0.8	1.3	1.5	1.0	0.71
YLR370C	1.1	1.0	1.1	1.4	1.4	4.1	2.1	0.8	1.5	1.9	1.0	1.2	3.1	1.9	1.5	1.6	1.6	2.0	1.41
YLR423C	1.2	1.2	0.7	1.9	1.5	1.2	3.8	2.0	1.2	1.0	1.0	1.7	3.9	1.2	1.3	1.9	1.2	1.6	0.34
YML092C	1.1	3.1	2.4	1.1	0.9	1.9	1.2	1.2	6.4	4.0	2.5	1.2	2.3	1.6	1.4	2.2	1.3	1.5	1.72
YML130C	1.5	2.7	5.3	1.2	0.9	0.6	2.9	2.7	7.8	4.2	1.9	2.3	5.8	1.3	2.4	0.8	1.2	1.2	1.59
YMR214W	0.8	3.8	1.0	1.4	0.8	0.9	1.0	1.1	2.1	1.0	0.7	1.0	2.4	1.1	4.8	0.7	1.1	1.0	0.88
YMR297W	0.7	2.0	3.6	1.9	0.6	1.8	1.2	0.8	1.9	1.0	2.5	1.2	4.2	0.5	2.4	1.9	1.1	1.4	4.10
YNL036W	2.0	1.9	3.2	1.0	1.6	1.1	2.0	2.1	6.6	5.0	1.7	1.4	3.3	5.1	1.6	1.3	1.4	1.9	2.04
YOL005C	1.4	1.4	1.1	0.8	1.6	1.1	1.1	1.0	0.9	1.0	1.6	1.2	2.9	1.2	0.9	1.0	1.2	1.2	1.71
YOR134W	2.0	3.6	1.0	9.5	0.9	1.4	1.1	1.5	1.5	8.2	1.9	2.8	4.4	1.3	1.6	7.7	2.2	4.6	0.28
YOR362C	1.0	1.7	1.0	0.8	1.7	1.4	1.6	1.4	4.3	3.0	1.3	1.3	2.5	1.4	1.0	1.5	1.1	1.8	2.55
YAR009C	0.8	1.3	0.6	1.0	1.4	1.6	2.7	1.4	0.9	1.4	0.9	1.3	2.0	1.0	2.1	0.6	0.8	1.2	7.11
YBL101C	1.0	1.1	1.9	0.9	1.0	0.9	0.8	0.8	3.0	1.4	0.8	1.1	3.5	0.9	2.7	1.4	1.0	1.1	0.39
YBR046C	1.4	1.4	1.7	1.8	1.3	2.6	3.9	1.6	4.6	6.2	2.9	1.2	2.0	1.3	2.1	3.0	1.2	2.0	0.63
YBR139W	1.2	1.4	3.1	1.4	0.8	2.4	1.9	0.7	2.3	1.6	2.3	1.2	2.7	1.1	5.6	2.3	1.2	2.0	1.21
YBR170C	0.8	1.2	0.6	1.4	1.5	1.4	1.9	1.3	6.1	4.2	1.5	1.2	2.7	1.3	1.9	1.3	1.1	1.4	0.72
YBR177C	0.8	1.1	4.0	1.2	1.2	2.3	0.9	0.9	2.1	1.7	0.6	1.2	3.1	1.3	1.4	0.4	0.8	0.9	0.76
YBR212W	0.7	1.2	2.6	1.2	1.0	1.4	0.9	0.6	2.7	2.3	1.1	0.9	2.2	0.7	1.0	1.5	1.1	1.0	0.95
YBR239C	1.0	1.3	0.9	1.5	0.8	1.5	1.0	1.3	0.4	1.2	0.7	1.1	1.9	1.1	1.0	2.7	1.0	0.9	0.31
YCL033C	1.1	2.0	1.7	1.7	1.2	4.6	2.4	1.1	2.3	1.4	1.9	1.6	2.0	1.8	0.8	3.6	2.0	2.0	1.14
YCR062W	0.8	1.9	2.7	2.8	1.4	1.9	0.9	0.7	0.7	1.3	1.2	1.3	2.2	1.0	2.3	1.1	1.1	1.0	0.41
YCR067C	0.9	0.7	1.2	1.3	0.7	0.8	0.8	0.7	1.8	1.6	1.2	0.9	2.0	0.9	2.1	1.4	1.1	0.9	0.62
YDL020C	2.3	1.2	3.4	1.1	1.2	2.5	1.0	2.2	5.6	2.9	1.9	1.1	3.4	1.2	1.5	1.8	1.5	1.7	1.36
YDR168W	1.2	1.4	1.0	0.8	1.5	1.3	2.4	2.1	3.7	2.3	1.5	1.2	2.4	1.4	1.9	1.4	1.2	1.4	1.28
YDR169C	1.0	1.4	1.1	1.3	1.3	1.2	1.1	1.0	1.6	1.4	0.9	0.9	1.9	0.9	1.4	0.9	1.4	1.1	0.40
YDR188W	0.8	1.2	1.0	0.8	0.8	0.8	0.9	1.0	2.9	1.6	0.9	0.9	1.7	0.7	1.3	0.9	0.7	0.8	1.78
YDR264C	0.5	2.6	0.9	1.4	0.9	1.8	3.2	0.8	1.1	3.4	0.9	1.1	2.1	0.7	2.3	1.5	1.2	1.4	1.63
YDR304C	1.0	1.8	2.7	1.3	1.5	2.1	2.0	1.3	3.9	1.9	1.2	1.3	2.3	1.7	1.0	4.0	1.6	1.8	2.23
YDR403W	1.0	1.2	1.6	1.0	1.2	1.1	1.2	1.2	4.1	3.6	1.0	1.0	2.0	1.1	0.9	0.9	0.9	1.0	0.35

YDR427W	0.8	1.1	0.8	0.8	1.5	1.9	1.4	1.2	2.3	2.0	1.2	1.1	2.1	1.0	1.3	1.1	1.0	1.5	2.37
YEL012W	1.3	1.8	1.0	1.8	1.7	1.6	4.7	1.4	4.6	4.2	2.2	1.2	2.2	1.5	1.1	2.5	1.5	2.2	0.74
YER009W	1.3	0.6	2.4	1.2	1.2	2.0	2.8	1.0	0.7	1.0	1.4	1.1	2.0	2.0	0.9	1.5	2.0	2.1	3.35
YER021W	0.8	1.0	0.9	0.9	1.4	1.1	1.5	1.2	3.0	2.2	1.3	1.0	1.8	0.8	0.8	1.4	0.8	1.5	2.02
YER094C	1.0	1.3	0.9	1.1	1.9	1.1	1.8	1.3	2.3	1.7	1.3	1.1	2.1	1.3	0.8	1.5	1.3	1.8	3.01
YER177W	1.4	1.5	2.1	1.5	0.9	1.6	1.2	1.1	1.8	1.7	1.9	1.1	2.2	0.9	1.4	1.0	0.9	2.0	5.81
YFL029C	1.0	1.2	1.2	1.8	1.7	1.0	1.6	1.5	4.3	2.9	2.1	1.1	1.8	1.9	1.3	1.2	1.2	1.4	0.49
YFL038C	1.0	1.2	0.7	1.3	1.5	1.3	1.7	1.4	2.1	1.9	1.7	1.1	2.1	1.5	1.5	2.1	1.2	1.6	2.31
YFR004W	1.0	1.5	0.8	1.4	1.0	1.5	1.3	1.4	3.6	2.6	1.3	1.2	2.0	2.1	1.1	1.3	1.0	1.4	2.44
YFR050C	0.9	1.2	1.1	1.3	1.7	1.5	1.4	1.4	3.1	2.1	1.4	1.5	2.1	1.6	1.5	1.5	1.1	1.7	1.70
YGL011C	1.2	1.5	1.1	1.1	1.8	1.6	1.5	1.3	2.0	2.2	1.5	1.0	2.1	3.0	1.3	1.7	1.3	1.5	1.78
YGL094C	0.8	1.3	0.3	0.9	1.3	1.0	0.8	1.0	1.4	1.1	0.6	0.8	2.3	0.9	1.9	1.0	1.0	0.9	0.51
YGL150C	0.7	0.8	1.2	1.0	0.8	1.1	0.8	0.8	1.4	0.9	0.4	0.8	2.4	1.0	1.3	0.9	0.9	0.8	0.62
YGL207W	0.5	0.6	0.9	0.6	1.3	0.9	0.6	1.0	1.4	1.1	0.7	0.7	2.5	0.8	1.2	0.7	0.9	0.8	0.88
YGR232W	1.2	1.2	1.2	1.7	1.5	1.9	2.0	1.1	3.4	2.2	1.3	1.1	2.4	2.1	0.9	1.8	1.3	1.2	0.96
YGR248W	1.3	1.7	3.2	4.0	0.5	2.3	1.1	1.2	2.8	3.2	2.3	1.1	2.0	1.5	1.5	7.9	1.0	1.5	0.52
YGR253C	1.3	1.4	0.7	1.3	2.0	1.4	1.6	2.0	4.0	3.1	2.4	1.1	3.4	1.8	1.1	1.8	1.5	2.1	2.01
YHR027C	0.5	0.8	1.2	0.6	1.1	0.4	0.9	0.6	3.6	2.2	1.1	1.0	2.1	0.7	1.5	0.9	0.8	1.0	2.06
YHR161C	0.6	1.1	1.3	2.1	1.5	1.2	1.8	0.7	2.5	2.0	1.2	1.0	1.8	1.0	1.4	1.7	1.4	1.5	0.86
YHR169W	0.6	0.5	0.4	0.4	1.1	1.2	0.9	0.9	0.0	0.2	0.4	1.1	3.3	1.1	0.6	1.0	1.6	1.3	0.81
YIL010W	1.0	1.2	1.4	0.8	1.2	4.4	1.5	0.9	1.4	2.2	1.4	1.4	2.3	1.7	1.1	1.7	1.5	1.5	0.70
YIL034C	1.0	0.8	1.5	3.0	0.7	1.7	1.2	0.9	2.1	1.3	1.6	1.0	2.6	1.1	1.0	1.7	1.2	1.5	0.99
YIL142W	0.7	1.1	0.9	1.1	0.8	1.1	0.8	1.1	4.4	3.0	1.7	1.1	1.8	1.0	1.3	0.7	0.9	0.8	1.84
YIR039C	1.4	1.8	4.3	4.2	1.5	3.2	4.1	1.1	4.4	4.1	3.8	1.4	2.9	1.9	2.0	4.2	1.2	1.1	0.45
YJL001W	0.9	1.7	1.2	2.0		1.7	1.6	1.3	3.1	2.8	1.5	1.6	2.9	2.5	1.2	1.8	1.0	1.6	3.00
YJL035C	0.9	1.3	0.8	0.6	1.4	0.7	1.3	1.5	1.7	1.4	0.8	1.1	2.4	1.6	0.7	0.6	1.0	1.0	0.82
YJL053W	1.1	0.9	1.7	1.3	1.1	2.0	1.7	1.3	2.2	2.2	1.6	1.1	1.9	1.3	1.1	1.7	1.3	1.6	0.80
YJL164C	1.1	1.1	1.0	1.9	1.1	2.7	3.1	0.9	2.1	0.8	1.5	1.0	2.1	0.9	0.8	2.1	1.3	1.7	1.04
YJL210W	1.2	1.4	1.6	2.0	0.6	0.6	1.0	1.0	2.0	0.9	2.4	1.0	2.2	0.9	0.8	2.3	0.9	1.0	0.70
YJR117W	1.0	2.1	2.3	0.7	1.2	1.3	1.0	0.8	4.7	2.3	1.0	1.2	2.8	0.8	2.2	0.7	0.8	0.9	1.34
YKL007W	1.2	1.6	1.2	0.9	1.0	0.9	1.5	1.2	2.3	2.4	1.8	1.3	2.5	0.7	1.0	1.0	1.4	1.3	1.13
YKL117W	1.0	1.3	0.8	1.0	1.8	1.0	1.3	1.5	2.9	2.1	1.6	1.0	2.4	1.6	1.6	1.8	1.2	1.8	3.73

YKL193C	1.3	0.8	1.1	1.4	1.1	0.9	2.1	1.4	1.0	1.6	1.7	0.9	2.1	1.2	1.2	2.4	1.2	2.3	0.71
YLR120C	1.2	1.9	2.4	1.6	1.1	1.9	1.5	0.9	1.8	1.6	1.2	1.6	4.8	0.8	2.7	1.7	3.5	2.9	1.53
YLR136C	1.3	9.0	0.6	3.3	1.6	1.7	3.9	1.1	0.9	6.0	1.2	1.3	2.9	0.7	2.1	1.2	1.8	1.4	0.41
YLR178C	1.7	6.9	8.8	4.6	1.0	4.2	3.3	0.9	4.3	4.1	3.7	2.2	7.5	2.8	2.3	10.6	2.0	3.6	1.03
YLR327C	5.5	3.3	14.4	8.2	1.3	5.1	5.7	2.2	3.0	8.3	5.0	1.4	2.8	1.5	0.8	2.8	3.3	5.3	2.23
YLR356W	1.0	2.9	4.9	1.2	1.1	3.4	1.1	0.7	2.3	1.6	3.1	1.5	2.5	2.2	2.8	0.9	1.1	1.0	0.41
YLR362W	1.1	1.2	1.0	3.0	1.5	0.8	1.9	1.4	3.5	3.3	1.5	0.8	2.4	1.2	1.3	1.9	1.2	1.3	0.35
YLR429W	0.7	1.0	0.6	0.9	1.4	0.8	1.3	1.0	0.9	1.3	0.9	1.1	2.3	0.7	1.5	1.0	1.0	0.9	0.86
YMR004W	0.9	0.9	1.3	1.3	1.0	0.5	1.2	1.0	94.2	3.4	2.5	1.0	2.2	2.2	1.3	1.3	0.9	1.3	0.52
YMR219W	0.7	1.1	1.0	0.7	1.6	0.8		1.1	2.3	0.9	1.5	1.5	2.1	0.5	1.7	0.8	1.1	0.9	0.23
YMR275C	0.7	0.7	1.2	0.6	0.7	1.4	0.8	0.8	2.4	2.1	1.1	0.7	2.1	0.8	1.7	1.0	0.9	0.7	0.79
YMR314W		1.2	0.9	1.3		1.3	1.1	1.2	5.9	2.7	1.8	1.0	2.6	1.0	1.2	1.6	1.3	1.6	1.67
YNL006W	1.1	2.1	1.3	1.5	0.9	1.0	1.6	1.1	4.0	4.0	1.1	0.7	2.3	0.8	0.7	0.9	1.0	1.3	1.20
YNL007C	0.7	2.4	5.1	0.8	1.2	0.6	1.2	0.8	3.0	1.7	1.3	0.7	2.1	0.4	0.8	0.5	1.1	1.0	3.62
YNL093W	2.1	6.4	0.4	4.5	1.2	1.6	1.4	0.8	1.7	2.0	1.6	1.1	2.2	1.1	0.6	4.9	3.0	3.1	0.32
YNL333W	1.0	1.4	1.7	2.3	1.5	1.5	2.9	2.1	2.3	2.1	2.0	1.0	2.2	1.9	1.0	1.4	1.4	1.1	0.49
YNR010W	1.3	1.2	0.5	2.8	1.8	1.3	1.5	1.1	1.7	0.9	1.4	0.8	2.8	1.3	0.8	1.2	1.7	2.3	0.37
YNR069C	1.5	1.3	0.7	0.4	1.4	1.7	1.4	1.4	5.5	5.8	2.5	1.2	3.4	2.1	1.0	0.8	1.1	0.9	0.18
YOL164W	0.9	4.4	1.0	1.5	1.6	1.2	2.2	1.0	4.9	3.6	1.0	1.1	3.4	1.3	1.0	1.1	1.1	1.3	0.45
YOR036W	1.8	0.9	1.4	1.6	1.1	1.7	1.8	1.4	1.2	1.9	1.3	1.2	2.1	1.2	1.2	1.3	1.6	1.7	0.98
YOR117W	0.8	1.3	1.7	0.8	1.2	1.1	3.3	1.0	3.5	1.8	1.2	2.5	2.3	1.0	1.4	1.2	1.4	0.9	1.42
YOR124C	0.6	1.1	1.3	0.8	1.1	0.9	1.1	1.3	2.0	1.9	1.2	0.9	2.1	0.8	1.3	0.9	1.0	1.0	0.65
YOR132W	0.9	1.6	0.8	2.8	1.1	1.6	1.4	1.2	2.8	1.6	1.3	0.7	2.5	0.7	1.5	1.6	1.2	1.6	0.46
YOR157C	1.0	1.3	1.2	1.3	0.7	1.2	1.2	1.2	5.7	2.6	1.6	1.3	2.4	2.2	1.9	0.9	1.2	1.2	1.23
YOR185C	1.1	1.3	1.9	1.1	1.2	3.0	1.3	1.4	1.9	2.9	1.2	1.5	2.2	2.1	1.0	2.2	0.9	1.1	1.67
YOR259C	0.8	1.1	0.8	0.9	2.0	0.8	1.3	1.1	2.7	1.5	1.0	0.8	1.8	1.2	1.3	1.4	0.9	1.5	2.33
YOR261C	1.0	1.4	0.6	0.9	1.5	1.4	1.9	2.6	5.5	2.5	2.1	0.9	2.5	1.8	1.3	2.0	1.0	1.9	2.80
YOR288C	0.9	1.3	1.1	1.1	1.1	1.0	2.0	1.9	0.9	1.0	1.4	1.4	2.4	0.8	1.8	1.4	1.5	1.6	0.79
YPL109C	1.1	2.5	0.5	1.2	1.2	1.2	1.8	1.1	1.2	1.5	-0.2	0.9	1.8	1.3	1.3	1.9	1.2	1.2	0.21
YPL149W	1.5	1.5	0.6	2.8	0.8	0.9	1.2	1.1	5.6	3.7	1.2	0.9	2.3	1.0	0.8	1.2	2.2	2.9	1.39
YPL154C	0.7	3.3	4.2	1.2	1.2	3.5	1.5	0.8	2.8	1.7	1.8	1.5	3.1	0.8	4.0	1.8	1.6	2.0	3.78
YPR103W	0.7	1.1	1.3	0.7	1.7	1.2	1.6	1.0	5.5	2.0	0.9	1.2	2.8	1.8	1.0	1.1	1.2	1.5	1.93

YPR108W	0.8	1.0	1.3	0.6	1.3	0.7	1.5	1.6	1.6	3.7	2.8	1.8	1.0	2.6	1.0	1.3	1.2	1.0	1.3	2.25
YCL027W	0.7	2.0	1.0	1.0	1.2	0.7	1.3	1.0	0.6	0.7	16.3	0.9	0.8	1.1	1.2	3.6	1.1	0.7	0.8	0.30
YDR055W	1.7	2.1	2.2	2.8	1.7	0.8	3.9	1.5	1.6	0.8	2.4	2.2	1.4	3.1	0.9	5.7	3.4	2.0	1.9	1.55
YEL042W	0.6	0.9	1.7	0.9	0.7	0.2	0.5	0.5	0.7	0.2	0.3	1.6	1.0	0.4	0.6	4.8	0.6	0.7	0.8	1.21
YGR136W	0.9	1.2	1.3	0.7	1.2	2.1	1.1	1.5	1.3	2.1	2.2	1.3	1.2	1.7	1.1	2.6	2.2	1.3	1.8	1.42
YHR142W	1.5	0.8	2.1	0.8	1.3	0.4	1.2	0.9	1.3	0.4	0.9	1.1	1.3	1.2	1.2	4.8	1.0	1.3	1.3	1.17
YJL073W	0.8	0.8	2.5	0.7	1.2	1.7	2.0		1.0	1.7	0.7	0.5	1.0	1.6	1.1	2.6	0.8	1.1	1.0	0.43
YJR004C	0.2	0.8	3.4	0.6	1.1	0.3	1.2	0.4	0.4	0.3	0.7	0.7	0.8	0.3	0.7	3.2	0.3	0.4	0.4	2.12
YKL039W	0.8	1.1	2.4	0.8	0.7	1.3	4.9	2.0	0.8	1.3	3.3	1.0	0.9	1.9	0.8	3.1	1.5	1.2	1.3	1.13
YLR250W	1.5	1.0	1.0	1.4	1.4	2.7	1.1	1.9	1.3	2.7	2.4	1.4	1.0	1.2	2.5	2.6	2.1	1.4	2.2	2.90
YOR181W	1.0	0.9	1.1	1.4	0.7	0.6	0.9	0.7	0.7	0.6	0.5	1.0	0.8	1.2	0.9	3.4	1.0	1.1	0.6	0.39
YOR198C	1.0	0.7	1.4	1.0	0.8	2.4	0.9	1.6	1.3	2.4	1.4	1.4	1.5	1.8	1.1	3.8	0.8	1.1	1.5	1.76
YPL089C	1.2	1.0	0.5	1.8	1.4	0.4	0.8	0.9	0.8	0.4	2.5	0.9	0.7	1.3	0.8	2.6	0.9	1.5	1.1	0.37
YBR214W	0.9	2.1	5.7	2.0	1.1	2.2	0.8	1.1	0.7	2.2	3.5	3.2	1.2	2.1	0.9	5.1	1.3	1.1	1.2	0.51
YDR085C	1.9	1.8	1.6	3.4	0.9	0.4	2.1	4.1	2.0	0.4	2.3	1.7	1.6	1.1	1.6	3.1	2.3	1.3	1.8	0.37
YDR259C	1.4	1.0	0.4	1.4	1.0	1.0	0.5	2.8	1.4	1.0	1.8	1.2	1.0	2.0	1.5	2.9	0.9	1.0	0.8	0.28
YDR388W	0.7	0.7	1.2	1.0	0.7	1.4	1.0	1.1	0.8	1.4	0.9	1.6	0.8	1.7	0.6	2.6	1.0	1.2	1.3	0.99
YDR432W	0.5	0.8	1.0	1.4	1.6	0.7	0.6	0.5	0.5	0.7	0.8	0.6	0.7	1.4	0.5	2.6	0.6	0.7	0.7	2.38
YDR481C	0.7	2.3	1.3	0.7	1.0	1.9	0.9	0.7	1.0	1.9	1.6	1.2	0.9	1.5	0.9	3.5	1.3	1.2	1.4	1.43
YDR510W	1.0	1.3	1.5	1.3	0.7	2.7	1.0	1.6	1.5	2.7	2.5	1.6	1.4	2.0	1.9	2.2	1.5	1.1	1.5	1.57
YGR189C	1.1	0.9	1.5	3.5	0.7	0.3	0.5	0.6	1.0	0.3	0.9	1.5	1.3	1.2	0.9	9.3	0.6	2.3	1.7	1.51
YIL123W	1.0	0.5	1.2	1.5	0.6	0.1	0.5	0.5	0.6	0.1	0.2	1.2	0.8	0.4	0.3	4.8	0.7	1.3	1.0	1.67
YIL140W	0.7	1.0	1.5	1.4	0.8	0.7	0.5	0.5	0.7	0.7	0.6	0.9	1.0	0.5	0.9	3.3	0.6	0.7	1.0	0.62
YKL096W	1.4	0.6	8.1	1.6	0.6	0.0	0.6	0.2	0.5	0.0	0.5	3.5	0.3	0.1	0.5	2.3	0.4	0.5	0.7	2.04
YLR391W		0.7	2.9	0.8	1.2	0.4	1.5	0.7	0.7	0.4	0.7	1.4	1.0	0.9	0.5	3.9	1.3	1.4	0.9	1.72
YMR094W	1.0	0.5	1.3	1.7	0.9	-0.1	0.5	0.8	1.0	-0.1	0.9	1.0	0.9	1.4	2.8	6.6	1.0	1.0	1.0	0.23
YMR104C	1.9	14.3	2.2	2.6	0.7	0.6	1.9	1.5	0.9	0.6	3.2	1.1	1.0	1.5	1.1	2.5	2.3	2.8	1.9	0.51
YMR276W	0.6	1.4	1.5	0.7	1.3	1.8	0.8	1.1	0.8	1.8	1.7	1.9	1.2	1.9	1.2	3.3	0.9	1.2	0.7	0.47
YOL013C	0.9	1.0	1.0	1.5	0.7	0.8	1.1	1.7	1.0	0.8	1.0	1.4	1.1	1.8	0.9	2.7	1.3	1.1	1.4	0.65
YOR355W	0.7	0.6	1.1	0.8	1.0	0.1	1.6	1.1	0.8	0.1	0.8	1.2	0.9	1.1	0.6	3.2	0.8	0.8	0.9	0.98
YCR071C	1.1	0.7	0.9	0.8	1.2	0.6	2.5	1.4	0.9	0.6	1.2	1.1	1.1	1.3	1.7	1.1	1.5	1.2	1.3	0.96
YDL008W	1.1	1.0	1.0	1.1	1.8	2.3	2.7	2.0	1.2	2.3	3.0	0.9	1.2	2.0	2.2	0.7	1.3	1.5	1.6	0.95

YDR115W	1.3	0.9	0.6	1.5	1.4	2.3	1.6	1.3	1.1	1.0	1.2	0.9	1.1	1.5	0.8	2.2	1.2	1.4	1.50
YER130C	0.9	1.6	0.5	0.8	1.7	2.7	1.5	1.2	0.5	1.3	0.9	1.0	1.6	0.8	1.1	0.7	3.0	2.5	1.36
YMR226C	1.1	1.8	1.4	1.6	0.9	2.6	1.8	1.6	2.6	2.2	1.4	1.1	1.6	1.6	2.0	1.7	1.6	2.0	2.03
YOR383C	0.9	4.3	2.6	0.9	0.9	6.8	8.0	1.0	1.2	4.5	1.4	1.1	1.2	0.6	1.1	3.0	1.4	1.1	0.68
YAR010C	0.8	1.2	1.2	0.8	1.0	2.3	1.9	1.3	1.2	1.1	0.9	1.0	1.4	1.0	1.8	0.7	1.5	1.0	4.69
YBL043W	1.2	1.2	1.1	1.3	1.1	26.9	1.5	2.1	0.5	14.7	1.5	0.9	1.8	1.9	1.8	2.3	2.3	1.8	0.47
YCR004C	1.7	1.0	12.0		1.2	1.8	1.4	1.2	4.7	2.1	1.9	0.8	1.3	3.7	0.8	4.9	1.4	3.5	3.02
YCR088W	0.9	1.1	1.2	0.9	1.1	2.0	1.2	0.5	0.8	0.9	1.0	1.3	1.9	0.9	2.8	0.7	1.4	0.9	0.47
YDL238C	0.7	1.0	1.1	1.7	0.9	2.1	1.4	5.8	1.7	2.7	1.1	0.9	2.0	1.2	1.3	1.7	1.1	1.3	0.35
YDR084C	0.9	0.9	1.5	1.1	1.2	2.1	0.9	0.7	0.6	0.6	0.7	0.7	1.0	1.0	3.9	1.0	2.0	1.3	1.12
YDR104C	0.8	1.1	1.2	1.2	1.3	1.7	1.0	1.3	2.8	2.7	1.0	1.1	1.6	1.4	1.4	0.9	0.9	1.0	0.34
YDR315C	1.0	1.4	1.0	1.3	0.9	9.4	1.4	1.4	1.1	1.6	1.1	0.6	1.6	1.4	1.5	1.5	1.2	1.2	0.48
YDR358W	0.7	1.1	0.7	1.1	1.4	2.5	2.8	1.2	2.9	3.2	1.0	1.1	3.2	1.2	0.9	2.2	1.9	1.9	0.50
YEL066W	2.0	2.9	1.5	2.2	0.8	2.2	1.8	1.4	1.3	2.4	1.9	0.8	1.6	1.9	1.0	1.9	1.0	1.1	0.64
YER039C	1.0	1.2	1.0	4.1	1.5	1.6	1.3	0.7	1.2	0.8	1.2	0.9	2.1	1.2	1.2	1.8	1.7	1.1	0.42
YER107C	0.9	0.5	1.0	0.6	1.3	2.5	1.0	0.8	0.4	0.5	0.7	0.7	0.9	1.1	0.7	0.9	1.1	1.2	0.92
YFL028C	1.2	1.1	0.7	1.5	1.7	1.7	2.0	1.5	2.7	1.8	1.3	1.1	1.4	1.6	0.8	1.9	1.2	1.5	1.28
YFL043C	1.0	1.2	0.6	1.2	1.2	1.8	1.8	1.0	2.2	3.8	1.1	0.9	1.5	1.5	1.1	2.0	1.5	1.2	0.38
YGL229C	0.6	0.7	0.9	0.8	1.0	2.2	2.2	0.7	1.8	1.7	1.1	1.1	1.7	1.0	0.2	1.8	1.1	0.9	0.44
YGR257C	0.7	0.8	0.9	1.1	1.3	2.1	2.4	1.0	1.5	1.9	1.2	0.9	2.0	0.9	1.3	1.3	1.1	1.3	0.84
YHR004C	0.9	1.1	0.8	1.1	1.5	2.0	1.5	0.9	1.1	0.6	0.8	0.9	1.1	0.8	1.2	2.4	1.4	1.6	0.84
YHR071W	1.5	1.1	0.6	1.6	1.5	2.0	1.0	1.7	1.0	7.2	1.8	0.8	2.3	1.6	3.0	1.7	2.6	1.0	0.79
YJL089W	1.1	1.5	1.0	0.8	1.1	1.6	1.1	1.1	1.6	3.9	0.6	1.2	1.8	1.8	6.4	1.2	1.2	1.1	0.21
YJL116C	0.9	1.8	1.3	1.9	1.3	3.4	0.8	1.8	2.4	2.6	2.9	1.1	4.3	2.6	1.0	1.3	1.2	0.7	1.01
YJR086W	1.2	1.1	0.8	1.4	1.3	1.9	1.7	1.1	1.4	1.1	1.0	0.8	0.9	2.2	2.0	1.4	1.4	1.6	1.24
YKL008C	1.2	0.6	2.0	0.8	0.9	3.8	1.4	1.2	0.3	0.4	1.5	1.5	1.7	0.8	1.3	2.1	1.4	1.9	2.11
YKL013C	1.4	0.9	1.4	1.1	1.9	1.9	1.8	0.9	1.5	1.4	1.1	0.7	1.3	1.4	1.2	1.5	1.6	1.7	1.55
YKL041W	1.2	0.8	1.1	1.0	1.3	2.2	1.0	1.6	1.6	1.5	1.2	0.8	1.3	1.3	1.0	2.5	1.1	1.3	0.91
YKL139W	0.9	0.7	1.4	0.8	2.8	3.5	2.6	1.2	1.6	1.5	1.4	0.8	1.6	1.0	1.0	1.3	1.9	0.8	0.62
YKR014C	1.1	1.3	0.7	1.1	1.5	2.1	1.7	1.6	2.4	2.0	1.1	1.1	1.5	1.8	1.4	2.4	1.0	1.7	2.05
YLR093C	1.3	0.8	0.7	1.2	1.4	2.9	1.9	1.2	1.5	1.3	1.0	1.0	1.3	1.3	0.9	2.4	1.7	3.2	1.90
YLR118C	1.0	1.1	1.6	1.0	1.0	2.5	1.5	1.0	1.1	1.3	1.2	1.0	1.4	1.5	0.8	3.5	1.3	1.9	1.17

YLR251W	1.8	0.8	4.2	4.6	1.6	2.1	2.6	1.2	2.1	1.3	4.1	0.8	1.7	1.3	0.8	2.5	2.1	3.8	0.78
YMR027W	0.8	2.6	0.7	0.8	1.1	2.1	2.0	0.9	1.1	1.4	1.1	0.9	2.4	0.9	4.0	0.8	1.3	1.2	4.05
YMR262W	1.0	1.3	1.9	1.1	1.2	2.0	1.9	1.0	3.0	1.2	1.3	0.8	1.7	0.9	0.3	1.0	1.0	1.2	0.65
YNL214W	1.2	0.9	1.1	1.1	1.4	2.3	1.3	1.1	1.5	1.5	0.6	0.8	1.2	1.7	0.9	2.0	1.1	1.2	0.47
YOR149C	0.7	0.9	1.0	0.8	1.1	2.3	1.0	0.7	0.4	1.0	1.0	0.9	1.3	0.9	1.3	1.1	1.0	1.2	0.76
YOR165W	0.9	1.5	0.7	0.8	0.8	2.2	0.9	1.1	0.8	1.3	1.3	0.7	0.9	0.8	0.8	1.0	0.9	1.0	1.03
YOR285W	1.4	6.0	3.5	1.9	1.7	2.1	4.0	1.2	4.0	2.9	2.3	0.9	2.1	1.6	2.0	2.9	2.3	3.3	2.62
YOR367W	1.0	0.9	1.7	0.9	1.1	3.3	1.9	1.1	1.1	1.1	1.4	0.5	0.8	1.5	1.1	1.3	1.4	1.4	0.60
YPL018W	1.0	1.4	1.0	0.5	1.8	2.1	0.9	1.1	1.4	1.2	1.3	1.1	2.2	1.3	0.9	0.8	1.3	0.8	0.22
YPL203W	1.3	1.0	2.2	1.0	2.1	1.8	2.1	1.1	1.8	2.1	1.5	0.9	1.5	1.0	0.6	2.3	1.3	1.7	0.79
YPL255W	0.8	0.3	1.1	0.6	0.9	2.0	0.6	0.9	0.1	0.1	0.7	0.6	0.6	0.7	0.6	0.7	0.8	0.7	0.55
YPR073C	1.2	1.9	0.5	1.4	1.8	2.0	2.5	1.5	1.3	2.6	0.9	0.8	1.4	1.5	0.8	1.8	1.4	1.8	1.55
YDR518W	0.8	1.7	1.1	1.2	1.6	1.2	2.7	1.1	0.2	1.2	1.0	1.5	1.8	0.8	2.5	1.7	1.4	1.6	0.93
YOR381W	0.8	2.0	0.8	1.8	1.0	1.0	3.6	0.8	1.2	3.5	2.6	1.1	1.7	0.8	0.6	2.5	0.8	0.9	0.38
YBR109C	1.6	1.3	2.4	1.1	1.0	1.4	2.4	1.7	3.8	3.3	1.5	1.4	2.0	2.0	1.4	1.9	1.4	1.9	2.15
YBR201W	1.2	4.3	1.2	2.4	1.2	1.0	3.4	2.2	0.8	1.0	1.1	1.7	1.9	1.1	1.6	1.5	1.8	1.6	0.75
YDR041W	1.2	1.1	0.6	1.8	2.0	1.6	2.4	1.2	1.3	1.3	1.2	0.8	0.9	1.4	1.0	2.4	1.5	2.5	1.85
YER136W	0.9	1.1	1.1	1.4	1.6	1.3	2.1	1.3	1.4	1.6	1.7	0.9	1.3	0.8	1.2	1.6	1.3	1.7	2.31
YER159C	1.1	0.9	0.2	1.6	2.1	1.3	2.0	1.4	0.2	0.9	1.6	0.9	0.9	1.1	2.2	1.1	1.6	1.9	0.99
YJL030W	1.6	1.4	0.5	1.0	1.3	1.1	1.9	1.6	2.3	1.9	1.4	1.0	1.4	2.1	1.5	1.9	1.3	1.5	0.87
YJR029W	0.8	1.3	0.6	0.8		1.0	2.4	0.9	1.1	1.5	0.6	1.0	2.1	1.1	1.8	0.7	0.8	1.1	5.84
YJR099W	1.4	0.9	1.1	1.3	1.5	2.1	2.0	1.4	1.4	2.4	1.3	0.7	1.5	2.1	0.5	2.0	1.1	1.7	0.94
YJR122W	2.0	1.4	2.5	1.1	1.3	1.4	1.8	1.4	5.3	6.1	2.4	0.9	1.3	1.4	0.8	1.9	1.0	1.1	0.43
YJR125C	1.0	1.0	1.2	1.0	1.2	1.3	1.9	0.9	1.8	1.3	1.1	0.9	1.5	1.1	1.3	2.0	1.2	1.4	0.90
YKL190W	1.1	1.3	0.4	0.9		1.5	2.0	1.1	1.8	1.9	1.5	0.9	1.3	1.7	1.4	1.8	1.3	1.3	1.14
YLL051C	0.8	1.1	1.0	1.5	1.4	1.2	2.0	0.9	0.9	1.8	0.7	1.1	1.3	0.8	1.2	0.8	1.0	1.0	0.81
YLR090W	0.7	1.1	0.8	1.3	1.2	1.3	2.2	0.9	1.8	1.4	1.0	0.8	1.7	1.0	0.8	1.9	0.8	1.0	0.67
YMR051C	0.9	2.8	0.8	1.3	1.7	1.2	2.6	0.9	1.0	1.4	1.1	0.9	1.3	1.2	1.7	1.0	1.8	1.2	3.91
YMR139W	1.0	3.4	2.5	1.5	1.2	1.5	2.2	0.9	2.8	2.4	1.3	0.9	1.6	1.3	0.9	2.3	1.1	2.0	0.89
YNL015W	2.3	6.7	1.8	2.4	1.8	1.7	3.5	2.2	2.1	4.3	2.1	2.8	3.9	1.6	1.4	5.3	3.0	5.2	1.03
YNL079C	1.1	1.0	0.4	1.0	1.7	1.1	1.9	1.6	1.5	1.2	1.3	1.2	1.8	1.0	1.5	1.4	1.0	1.9	3.26
YNL223W	1.1	1.2	0.6	1.7	1.0	1.8	2.2	1.4	3.3	1.9	1.3	1.3	2.0	1.2	1.0	2.1	1.0	1.5	0.34

YNR007C	1.2	1.8	0.7	1.0	1.5	1.3	1.9	1.2	2.5	2.0	0.7	0.9	1.5	1.5	0.6	2.0	1.4	1.6	0.49
YNR035C	0.8	1.2	1.7	1.0	0.8	1.1	2.6	1.1	2.9	1.5	1.5	1.1	1.7	1.0	1.3	1.6	1.4	1.8	1.60
YOL016C	1.3	2.0	0.4	2.0	1.6	0.9	3.0	1.3	1.9	1.6	1.3	1.4	3.0	0.7	0.5	1.6	4.3	3.8	2.10
YOL104C	1.0	1.7	0.2	1.8	1.9	1.4	2.6	1.4	0.2	1.7	1.2	0.8	0.6	2.2	1.3	0.5	1.1	0.9	0.32
YPR107C	1.4	1.0	1.2	1.9	1.5	1.3	2.0	1.3	2.4	2.4	1.2	0.7	1.4	1.7	1.0	1.4	1.2	1.5	0.81
YOL152W	0.2	0.6	1.0	0.8	0.7	1.8	2.4	4.1	0.9	1.2	5.9	0.8	0.5	0.4	0.8	1.2	1.1	1.2	0.91
YAL007C	1.3	0.9	0.9	1.5	0.6	0.7	1.5	1.7	1.1	0.9	2.0	1.3	2.0	1.3	2.5	0.8	1.2	1.5	1.74
YDL043C	1.0	0.8	0.8	1.2	1.1	0.5	0.9	1.3	0.8	0.8	3.9	0.9	0.8	1.2	0.8	1.2	0.8	0.8	0.78
YDL212W	1.0	1.2	1.6	1.2	1.1	0.4	0.7	0.9	0.4	0.6	2.0	0.8	0.5	1.0	1.1	0.9	1.1	1.7	4.27
YDR183W	1.2	0.7	0.9	1.4	1.5	1.4	1.8	1.8	2.5	2.9	1.8	1.1	1.4	1.9	1.4	1.3	0.8	1.0	0.61
YGL089C	0.4	0.7	2.0	1.0	1.5	0.5	0.4	1.0	0.0	1.9	2.3	0.4	0.2	1.4	0.9	0.2	0.3	0.6	3.00
YGL096W	1.9	2.9	1.2	2.5	0.9	0.5	1.8	1.7	2.1	3.6	1.7	1.1	1.2	1.4	0.8	1.7	1.1	1.1	0.54
YGR006W	1.2	1.1	0.9	2.9	0.5	0.5	1.0	1.2	0.7	0.9	1.6	0.8	1.4	1.1	1.2	1.5	0.9	1.0	0.40
YHL034C	0.7	1.0	0.7	0.8	1.9	1.1	1.4	1.4	1.9	1.9	2.2	0.8	1.6	1.0	1.4	1.6	1.2	1.5	2.11
YHR163W	0.9	1.2	1.3	1.2	0.8	1.9	0.9	1.3	1.4	1.1	2.9	0.7	1.1	1.5	0.7	1.2	1.1	1.2	1.71
YIR024C	1.5	0.9	0.9	2.0	1.1	0.8	1.5	1.4	5.6	2.9	6.3	1.1	1.6	2.6	0.9	2.2	0.9	1.4	0.75
YKL070W	1.0	0.8	1.7	0.9	1.3	1.1	1.1	1.5	15.0	11.0	10.4	0.6	1.0	2.2	0.8	0.9	1.0	0.9	0.29
YLL050C	1.4	1.0	1.2	1.7	0.9	1.9	1.4	1.3	1.0	1.0	2.3	0.9	1.8	1.2	1.6	1.3	1.2	2.1	3.43
YLR220W	0.9	0.6	3.0	1.0	0.9	0.3	0.4	1.0	0.4	0.4	2.4	0.7	0.5	1.4	0.7	1.1	0.8	0.8	2.28
YLR390W	0.9	0.9	1.2	1.7	1.2	0.7	1.5	0.8	1.7	1.7	1.9	1.0	1.1	1.1	0.5	2.0	1.0	0.9	0.51
YOL044W	1.0	1.4	1.0	1.3	1.0	1.2	1.2	1.1	1.6	1.4	2.1	0.7	1.3	1.1	0.6	1.3	1.6	1.9	0.65
YOL147C	1.6	1.1	2.4	1.5	0.7	0.9	0.6	1.5	0.5	0.7	2.8	0.7	0.8	0.9	0.8	2.4	2.0	1.7	1.09
YDR069C	1.4	0.8	3.0	1.5	1.6	0.7	1.0	1.8	1.8	4.5	0.8	0.7	1.3	1.2	1.0	1.3	1.0	1.3	0.33
YER131W	1.5	0.3	0.9	0.7	1.6	0.9	0.6	2.0	0.0	0.6	1.0	0.9	0.2	0.8	0.9	0.4	0.9	0.9	5.32
YGR044C	0.8	1.3	0.7	1.2	1.1	1.4	1.3	1.8	0.9	0.8	2.1	0.8	1.4	1.0	0.5	3.3	1.1	2.6	1.43
YMR240C	1.1	0.6	2.5	0.7	1.4	0.8	1.1	2.3	0.5	1.1	1.4	0.6	0.8	1.1	1.0	1.0	1.1	1.1	0.39
YBR105C	1.7	1.5	0.9	2.0	0.8	1.8	2.0	1.2	1.1	3.3	1.1	1.2	1.1	1.7	1.4	1.3	1.3	1.1	0.96
YBR182C	2.0	1.9	1.0	2.4	1.4	1.0	1.7	1.3	0.6	3.2	1.5	1.3	1.2	1.2	3.1	1.1	3.4	1.6	0.41
YBR186W	1.0	1.0	1.1	1.7	1.0	0.5	0.9	0.9	1.0	2.4	0.9	0.8	0.7	1.1	0.9	1.2	0.7	1.0	0.31
YEL052W	1.1	1.0	2.0	2.0	1.3	1.2	1.2	1.2	3.0	3.4	1.7	1.1	1.5	1.1	0.7	2.1	0.9	1.0	0.90
YER098W	0.9	0.9	0.5	1.1	1.4	1.6	1.3	1.7	2.8	3.3	1.4	1.0	1.1	1.3	0.9	1.7	1.2	1.5	0.35
YGL240W	0.9	1.2	0.8	1.8	1.2	1.1	1.2	0.8	2.0	3.4	0.9	0.8	1.7	1.3	1.1	1.0	1.2	0.8	0.48

YGR067C	2.2	1.4	1.2	4.6	1.6	1.3	1.5	1.5	0.7	6.7	1.0	0.7	1.0	0.9	1.2	1.7	1.2	1.0	0.11
YGR133W	1.0	1.1	0.7	0.6	1.3	1.2	1.2	1.2	1.3	3.6	1.6	0.9	1.2	1.4	1.0	1.5	1.0	1.0	0.35
YHR124W	1.1	1.1	1.5	2.0	0.9	0.8	1.2	1.1	3.0	6.8	1.1	1.2	1.7	2.7	0.8	1.8	1.3	1.1	0.24
YJL103C	1.3	1.8	3.8	1.3	1.1	1.0	0.7	0.8	2.3	2.4	1.5	0.8	1.4	1.0	1.3	0.9	1.4	1.2	0.44
YJR036C	1.2	1.2	1.0	4.3	1.5	0.9	1.0	1.0	1.4	3.0	1.1	0.9	1.1	1.3	1.8	2.0	0.9	1.2	0.31
YLR216C	1.2	2.3	3.3	1.1	1.2	1.2	5.2	1.3	14.1	4.1	1.8	0.7	1.2	1.1	1.2	1.5	1.2	1.3	1.44
YLR389C	0.8	6.4	2.3	0.6	0.7	0.2	1.0	1.0	2.4	2.8	0.9	0.8	1.9	0.8	1.0	1.4	1.0	1.0	0.60
YNL128W	1.3	4.6	1.1	0.8	1.2	1.1	1.0	1.3	2.9	2.4	0.9	0.9	1.4	1.4	1.1	0.6	0.9	0.9	0.21
YOL133W	1.0	1.6	1.4	1.2	0.9	1.6	1.8	1.0	4.7	3.8	1.5	0.6	1.0	1.4	1.3	2.0	1.3	1.3	0.87
YOR133W	1.1	1.3	1.6	1.3	1.3	0.9	1.1	0.8	3.1	4.9	1.3	0.8	1.3	1.1	1.8	1.3	1.2	1.2	0.26
YOR227W	1.1	2.4	3.2	0.9	0.5	1.0	1.0	0.7	2.9	3.0	1.2	1.0	1.7	1.1	3.7	2.2	0.8	1.3	0.35
YPR015C	1.3	1.3	1.5	1.7	1.1	0.7	1.3	1.2	5.6	5.3	1.0	0.7	1.5	1.5	1.6	2.0	1.0	1.0	0.32
YPR086W	1.0	1.4	0.7	0.7	1.2	1.1	1.6	1.3	3.0	2.9	1.3	0.8	1.0	1.0	1.3	1.4	1.2	1.2	1.37
YBL056W	0.7	0.7	1.1	1.2	1.8	1.6	1.4	1.3	3.6	2.2	0.7	0.9	2.7	0.9	1.0	1.7	1.1	1.5	2.49
YBR026C	1.1	1.7	2.8	0.9	1.2	0.1	0.9	1.1	3.4	1.6	1.6	1.2	1.5	1.5	0.7	0.5	0.8	0.9	0.59
YBR123C	0.8	0.7	1.6	1.8	1.1	1.3	0.9	0.9	3.2	2.5	1.1	1.0	1.4	1.1	1.0	1.2	0.8	1.0	0.62
YDR099W	0.9	1.0	2.0	1.3	1.1	2.2	1.3	1.1	2.4	1.3	1.1	0.9	1.5	0.9	1.9	1.4	1.2	1.7	3.51
YDR177W	1.2	1.7	1.0	1.0	1.0	1.4	1.3	1.6	3.5	1.9	1.3	1.2	1.7	2.4	0.8	1.3	1.3	1.5	1.77
YDR392W	0.9	2.9	1.1	1.3	1.2	0.6	1.1	1.1	4.3	1.5	1.2	0.8	1.4	1.3	1.1	1.4	1.0	1.2	0.63
YDR394W	0.9	1.2	1.3	0.8	1.2	1.1	1.2	1.3	3.8	2.0	1.8	0.6	1.0	1.2	1.1	1.0	1.1	0.8	0.97
YER184C	2.3	1.6	1.1	2.3	1.0	0.6	0.9	1.1	4.6	3.2	1.3	0.8	1.6	1.4	1.4	1.2	1.6	2.3	0.29
YFL059W	1.2	1.4	1.2	2.2	1.1	1.0	1.3	1.5	4.1	4.2	1.5	1.2	2.3	2.4	0.9	1.6	1.3	1.1	0.57
YGL185C	1.3	1.9	1.9	1.9	0.8	0.8	1.9	1.5	4.1	2.3	1.5	1.5	1.7	1.5	0.9	15.8	1.3	1.6	0.23
YHL019C	1.1	0.8	1.2	0.6	1.0	1.2	1.1	1.0	2.1	1.4	1.3	0.8	0.8	0.8	1.2	1.3	1.0	1.0	0.55
YHR012W	1.1	1.0	1.2	1.0	1.0	1.6	1.2	1.2	4.9	2.2	1.5	0.9	1.7	1.7	1.0	1.0	1.2	1.4	1.11
YHR028C	0.8	1.2	1.4	0.8	1.0	0.9	1.2	0.8	3.7	2.2	1.4	0.7	0.6	1.1	1.1	0.7	1.0	1.0	0.92
YHR109W	0.8	1.0	0.0	0.7	1.3	1.4	1.4	1.2	2.4	1.8	0.7	1.0	1.4	1.5	0.9	1.3	0.9	1.1	0.22
YHR156C	1.3	1.3	0.9	2.1	1.9	1.0	1.2	1.2	3.6	1.9	0.6	0.7	1.0	1.9	1.2	1.4	0.9	1.3	0.47
YIL159W	1.1	1.6	1.3	0.7	1.2	2.3	0.6	1.1	5.9	1.6	0.8	0.9	1.5	2.0	1.0	0.7	0.9	0.8	0.29
YJL154C	0.6	2.7	0.7	0.6	1.2	1.3	1.5	1.0	2.3	2.0	0.5	0.9	1.6	0.8	1.2	1.2	1.2	1.1	0.62
YJR110W	1.0	0.6	1.0	1.4	1.3	0.9	0.9	1.1	4.9	2.3	1.2	0.7	0.9	1.1	1.2	1.1	0.8	1.0	0.58
YKL025C	0.7	1.1	1.1	0.9	1.1	0.9	0.9	0.9	2.8	1.7	1.1	0.8	1.3	0.9	1.2	1.1	0.9	1.0	0.54

YKL171W	0.9	1.3	1.2	2.1	0.9	0.4	0.9	0.8	8.2	1.8	2.8	1.1	1.5	1.1	1.2	2.1	0.9	1.2	1.2	0.45
YKL196C	1.2	1.1	0.5	0.9	1.3	0.9	1.5	1.3	4.3	2.0	1.6	1.0	1.8	2.5	1.9	1.9	1.3	2.0	2.41	
YKR068C	1.2	1.5	1.0	1.8	1.1	1.4	1.4	1.3	2.4	1.9	1.0	1.0	1.1	1.6	0.8	1.4	1.4	1.7	1.72	
YLR144C	0.8	1.5	4.0	1.3	0.7	0.9	0.7	1.1	2.8	1.5	1.0	0.7	2.3	1.2	1.9	1.7	1.0	1.0	0.44	
YML112W	1.0	1.0	1.1	2.0	1.0	1.4	0.9	1.3	3.2	2.4	1.0	1.0	1.3	1.8	0.8	0.9	0.8	0.9	0.49	
YOL038W	0.9	1.0	0.4	1.6	1.8	1.2	1.4	1.4	3.5	2.7	2.0	0.9	1.8	2.1	1.7	1.6	1.1	1.4	1.29	
YOR257W	1.1	2.5	0.8	1.1	1.1	0.8	1.3	1.5	3.4	1.4	1.0	0.7	0.8	1.5	0.7	1.6	1.1	1.6	0.68	
YOR265W	1.4	1.0	0.8	1.0	1.2	1.4	1.3	1.4	3.5	2.2	1.3	0.8	1.8	2.5	1.2	1.1	1.0	1.2	0.93	
YPL124W	1.3	1.3	0.7	0.7	1.6	0.8	0.9	1.8	2.2	1.0	0.9	0.7	0.9	1.6	0.6	0.8	1.3	1.2	0.41	
YPR125W	0.6	1.3	0.9		1.2	0.7	1.3	1.2	4.1	1.8	0.9	1.1	1.9	1.6	2.0	0.6	0.8	0.7	0.73	
YPR168W	0.9	1.0	0.2	0.5	1.3	0.4	1.1	1.1	4.7	2.7	1.2	0.5	1.0	1.1	1.2	1.3	0.9	0.8	0.29	
YPR180W	0.9	1.2	1.6	1.0	1.0	0.8	2.4	1.3	2.3	1.1	0.5	0.7	1.3	1.2	1.3	1.0	1.0	1.4	0.61	
YPR193C	1.0	2.2	0.6	1.1	1.4	1.3	1.4	1.1	3.5	4.1	0.1	0.9	1.6	1.6	0.9	1.6	1.1	0.9	0.17	
YBR045C	0.9	1.0	2.2	0.7	1.0	0.8	0.8	1.0	3.6	1.1	0.4	1.3	1.3	1.0	2.0	0.8	1.1	0.9	1.29	
YBR128C	1.0	1.1	2.1	1.0	1.1	1.5	2.1	1.2	2.8	1.2	1.3	0.7	1.3	1.4	1.4	2.0	1.2	1.8	0.44	
YCL055W	0.7	2.2	0.7	1.3	1.2	1.4	1.0	1.3	2.1	1.5	1.4	0.9	0.9	1.8	1.5	0.7	0.8	1.1	0.66	
YCR019W	1.0	1.6	1.0	0.8	1.4	1.5	1.1	1.5	2.8	1.6	2.0	1.0	1.6	1.2	0.7	1.4	1.0	1.0	0.45	
YDL065C	1.2	0.9	1.0	0.7	1.4	1.1	1.3	1.4	2.4	1.5	1.4	0.6	0.7	1.4	1.3	1.5	1.1	1.2	1.08	
YDL143W	0.8	0.8	1.2	1.1	1.0	1.0	0.9	1.2	2.1	1.8	1.3	1.1	1.9	0.9	1.4	0.9	0.8	0.8	1.86	
YDL197C	1.0	1.1	0.9	2.1	1.5	1.2	1.0	1.0	2.6	1.5	1.1	0.8	1.4	1.1	1.3	0.9	1.3	0.8	0.31	
YDL230W	1.0	0.8	1.2	1.3	1.4	0.9	1.1	0.9	2.6	1.2	0.9	0.6	1.3	1.0	1.4	1.7	1.0	1.2	0.42	
YDR212W	0.8	1.2	1.3	0.8	1.4	1.4	1.0	1.3	3.5	1.7	1.8	0.8	2.0	1.0	1.2	0.7	0.6	1.0	2.13	
YDR257C	0.8	5.3	0.6	0.8	1.6	1.1	1.0	1.0	3.0	1.6	1.3	0.7	1.0	1.0	1.3	1.0	1.1	0.8	0.62	
YDR329C	0.9	0.8	1.0	1.7	1.9	1.2	1.6	1.2	2.5	1.0	1.0	0.8	1.1	1.1	1.0	1.6	1.2	1.6	0.95	
YDR488C	1.0	0.3	0.9	0.9	0.9	0.9	0.7	0.9	2.1	0.4	0.4	0.6	1.3	0.8	3.5	0.7	0.9	0.9	0.32	
YDR505C	0.8	1.0	1.0	1.4	1.2	1.1	1.2	0.8	2.5	1.0	1.0	0.7	1.6	0.9	1.1	1.6	1.0	1.5	0.84	
YDR506C	0.9	0.7	1.3	0.7	0.9	0.9	0.6	1.0	1.9	1.4	1.1	0.9	0.3	0.5	0.9	0.4	0.6	0.5	1.90	
YDR515W	0.9	1.1	0.8	0.8	1.5	0.8	0.6	1.4	5.8	2.7	1.0	0.8	0.7	0.8	1.3	0.5	0.7	0.5	1.02	
YEL005C	1.1	1.3	0.8	1.1	1.6	1.9	2.0	1.2	2.3	1.6	1.6	0.8	1.2	1.7	0.8	3.4	1.1	1.4	0.45	
YER048C	0.8	1.2	0.4	1.4	1.8	1.9	1.9	1.6	2.3	1.1	1.6	0.8	1.1	1.0	0.6	1.8	1.3	1.6	1.08	
YER078C	0.9	0.8	1.8	0.8	0.9	1.4	1.3	1.1	2.3	1.5	1.3	1.0	1.5	1.0	0.9	1.0	0.9	0.9	0.49	
YER089C	0.5	0.5	1.4	1.1	0.8	0.6	0.9	0.5	2.0	2.3	1.2	0.7	1.3	0.6	1.0	0.8	0.7	0.6	0.75	

YER100W	1.1	1.1	0.7	0.7	0.9	0.5	0.6	1.2	2.3	1.6	1.1	0.8	0.7	0.8	1.0	1.1	1.1	0.7	0.95
YFR051C	0.5	1.1	2.2	0.5	0.5	0.2	1.0	0.8	2.5	1.4	1.3	1.2	1.5	0.8	3.0	0.8	1.1	0.9	0.53
YGL093W	0.8	0.9	1.2	0.6	0.9	1.0	0.8	0.8	4.5	1.6	1.1	0.6	0.7	0.8	1.4	1.0	0.9	1.2	0.56
YGL105W	0.9	0.8	1.1	0.8	1.3	1.5	0.7	1.2	1.8	1.4	1.4	1.1	1.0	1.1	0.9	1.0	0.8	0.9	3.01
YGL166W	1.0	1.4	0.6	1.5	1.3	1.0	1.5	1.2	1.8	2.4	1.0	1.1	1.9	1.1	0.9	1.2	2.1	1.9	0.73
YGL215W	0.7	1.2	1.2	0.9	1.0	0.9	1.0	0.7	2.2	1.8	0.8	0.7	1.0	0.8	1.0	1.2	0.7	0.9	1.31
YGL216W	0.7	1.3	0.8	1.0	1.2	1.5	1.0	1.0	2.6	0.5	0.5	1.0	1.4	1.0	1.1	0.8	1.1	0.9	0.37
YGL221C	1.1	1.2	1.0	1.1	0.9	2.2	1.3	1.6	3.4	1.9	1.4	1.1	1.7	1.7	0.7	1.3	1.1	1.4	1.64
YGR186W	0.9	0.7	0.4	1.1	1.5	0.7	1.3	1.3	2.6	1.9	1.0	0.6	1.1	1.1	1.3	1.4	1.3	1.2	0.79
YGR270W	0.9	1.0	0.8	0.8	0.7	0.9	0.9	0.9	2.3	1.3	0.7	0.8	1.3	0.9	1.6	1.0	0.9	0.9	0.51
YGR274C	0.7	0.5	0.3	0.9	1.8	0.7	1.3	1.2	2.2	1.8	0.9	0.7	1.1	0.8	1.2	0.7	1.1	1.0	0.62
YHR082C	0.7	1.1	1.6	0.9	1.6	0.8	1.1	0.8	2.6	1.7	0.9	0.7	1.7	0.9	1.4	0.7	1.1	0.9	0.60
YHR160C	1.0	0.5	1.6	1.6	1.0	1.0	1.1	1.2	2.3	1.6	-0.2	0.8	1.8	1.2	2.1	4.4	1.0	1.5	0.32
YHR171W	1.2	0.8	1.1	1.2	1.3	2.0	1.9	0.9	2.1	1.6	1.2	0.8	1.3	1.0	0.7	1.6	1.2	1.5	0.41
YHR205W	0.7	1.3	0.6	0.8	1.3	1.0	0.7	0.5	2.0	0.6	0.9	0.9	1.7	0.9	1.5	0.8	0.9	0.8	0.34
YIL062C	1.1	1.0	1.3	1.2	1.2	0.9	0.4	1.1	2.8	2.3	1.7	0.8	1.1	2.0	0.9	0.4	1.1	1.1	1.72
YIL075C	0.5	0.7	1.5	0.6	1.1	0.8	0.8	0.7	1.9	2.3	0.8	0.8	0.7	0.8	1.6	0.8	0.8	0.8	1.54
YIR009W	0.8	0.8	0.9	2.8	1.5	1.4	1.3	1.3	2.6	1.5	1.1	0.7	0.8	1.6	1.1	1.0	1.7	1.0	0.48
YIR018W	1.2	1.0	0.9	1.1	1.4	2.0	1.5	1.5	4.0	2.1	1.2	1.1	1.5	1.2	1.5	1.0	1.6	1.1	0.44
YJR091C	0.8	1.2	2.6	1.4	1.4	0.8	1.1	0.8	2.4	2.3	1.8	0.8	1.4	0.8	1.4	0.7	1.2	0.9	0.57
YKL079W	0.9	0.8	1.5	1.0	1.4	0.8	1.7	1.2	2.3	2.0	1.3	0.9	1.2	0.9	1.1	1.6	1.1	1.2	0.64
YKR102W	0.8	1.6	1.4	0.8	0.9			0.7	2.4	1.4	3.3	0.8	2.7	1.8	1.1	1.5	1.5	0.9	0.19
YLL054C	1.2	0.6	0.5	1.2	1.4	1.9	1.1	1.1	2.4	1.4	0.5	0.7	1.7	1.2	0.9	0.9	1.0	1.0	0.33
YLR200W	1.4	0.9	0.5	1.2	1.7	1.2	1.9	1.4	2.2	2.6	1.1	0.9	1.3	2.3	0.9	1.2	1.1	1.5	1.12
YLR248W	0.9	0.7	1.1	1.4	1.9	1.2	1.2	1.1	2.3	1.1	1.0	0.7	1.2	0.9	1.2	1.7	1.1	1.7	1.58
YLR266C	0.9	1.3	0.7	1.5	0.7	1.0	1.6	1.1	2.2	2.6	1.1	1.0	1.3	1.0	0.8	1.7	0.8	1.4	0.74
YML088W	0.9	1.6	0.3	0.5	1.5	0.7	1.1	1.1	4.0	2.2	0.5	1.0	1.3	1.1	1.4	0.8	0.8	0.8	0.58
YMR091C	1.0	0.7	0.8	1.0	0.7	0.8	0.8	1.3	2.1	1.3	0.9	0.8	0.9	1.5	0.9	1.3	0.9	1.2	1.03
YMR110C	1.0	1.4	1.8	1.9	1.3	2.1	1.9	0.9	2.3	1.6	1.6	0.9	1.8	0.8	0.9	2.7	1.5	2.5	1.63
YMR255W	1.2	1.4	0.7	1.8	1.3	0.9	1.5	1.4	2.8	2.4	1.2	0.9	1.1	1.6	1.0	1.3	1.5	2.0	0.97
YNL039W	0.7	0.8	0.3	0.4	2.1	0.8	1.1	1.2	2.1	1.8	0.4	0.9	0.8	0.8	1.3	1.3	0.9	1.1	0.61
YNL077W	1.5	1.1	2.3	1.2	1.5	0.9	1.2	1.0	4.4	5.1	1.0	0.7	1.5	0.5	0.3	0.6	1.3	1.0	0.78

YNL083W	0.8	1.4	1.3	1.2	0.8	0.7	0.9	1.1	3.1	1.6	0.9	0.9	1.2	0.9	0.8	1.8	0.8	1.1	0.37
YNL147W	1.3	2.4	0.6	0.7	2.0	1.5	1.4	1.8	2.1	2.9	1.2	0.8	1.0	2.0	1.2	1.7	1.0	1.6	1.32
YNR006W	1.1	1.8	0.5	0.9	1.5	0.9	1.5	0.9	2.2	2.3	0.8	0.9	1.6	0.9	1.2	1.1	1.8	1.2	0.40
YNR034W	0.9	1.4	5.3	1.6	1.0	0.9	1.3	1.0	3.0	2.1	1.3	0.9	1.4	0.9	1.1	2.3	0.7	1.1	0.64
YNR047W	0.7	1.0	1.7	0.5	1.1	1.0	1.0	0.8	2.0	1.2	0.6	0.9	1.5	0.9	1.2	1.5	0.9	1.0	0.44
YOR023C	0.7	1.2	1.3	0.8	1.2	1.8	1.1	0.6	3.5	1.3	0.9	1.1	1.9	0.9	1.6	0.8	1.1	0.8	0.37
YOR058C	2.0	1.4	2.0	0.6	0.9	0.9	0.8	1.7	6.4	4.5	1.4	0.7	1.7	1.7	1.1	1.6	0.9	1.0	0.31
YOR069W	0.8	1.6	0.7	1.3	1.0	0.5	1.2	1.1	1.9	1.4	2.8	0.9	1.1	1.3	1.4	1.5	0.8	1.1	0.69
YOR229W	0.9	0.9	1.0	0.8	1.5	1.3	1.1	0.8	2.5	0.8	0.7	0.8	1.3	1.0	1.2	0.9	0.9	1.0	0.58
YOR256C	1.0	0.8	0.9	1.5	1.7	0.9	1.4	1.1	2.7	1.8	1.7	0.7	1.6	1.1	1.1	1.5	1.2	1.5	0.53
YPL020C	1.1	0.7	0.7	1.3	0.8	0.8	1.1	1.1	2.3	1.6	1.1	0.9	1.1	1.1	1.6	1.2	1.3	1.4	0.91
YPL105C	0.6	0.8	0.6	0.7	1.1	1.2	0.7	1.0	3.4	1.4	0.6	0.7	1.0	0.6	1.1	0.5	0.8	0.6	0.80
YPR066W	1.2	2.2	1.1	2.2	1.3	0.7	1.3	0.8	2.3	1.9	0.9	0.8	1.4	1.2	0.7	1.6	1.1	1.2	0.41
YPR081C	0.9	1.0	1.0	1.1	0.8	1.1	1.1	1.0	4.2	2.6	0.9	1.0	1.4	1.1	1.3	1.8	0.9	1.3	0.34
YPR140W	0.9	1.2	0.8	1.8	0.9	3.0	1.9	1.1	2.1	1.3	0.8	0.8	1.3	1.4	1.7	2.4	0.8	1.3	0.47
YPR155C	0.9	2.5	1.5	1.4	0.9	0.9	1.4	1.0	2.0	1.3	0.9	0.9	1.3	1.2	0.5	3.4	0.8	1.6	0.40
YPR185W	0.7	0.9	0.3	0.4	1.1	0.9	1.2	1.0	2.5	1.7	0.9	0.8	1.7	1.0	1.1	1.3	1.3	1.1	0.68
YBR076W	2.3	1.1	1.4	5.0	0.9	0.8	1.0	0.7	0.4	1.8	0.8	0.9	1.9	1.2	1.1	0.5	1.4	1.2	0.36
YDR373W	1.7	0.8	0.5	1.3	1.8	0.9	1.4	1.9	2.5	2.8	1.7	0.5	1.0	2.1	1.6	1.4	1.2	1.6	1.08
YFR014C	2.1	2.4	0.8	2.6	0.7	0.8	1.4	1.3	1.0	1.6	1.8	0.9	1.3	1.0	0.6	2.3	1.2	2.9	0.94
YHR136C	2.4	13.6	1.4	2.1	2.4	1.4	0.5	1.3	0.1	2.0	2.0	1.2	0.3	1.7	0.5	1.3	1.6	2.5	1.33
YIL129C	0.8	5.8	1.0	1.2		0.3			2.1	1.8	1.5		1.9	0.9	1.0	1.0	1.3	0.8	0.25
YMR077C	1.1	3.9	1.1	1.8	1.0	0.5	1.4	1.7	1.9	2.5	1.5	0.9	0.8	1.6	1.7	2.3	0.9	1.3	0.59
YBR264C	1.2	3.7	1.5	1.5	0.7	0.9	1.3	1.2	0.9	1.1	1.0	1.0	0.9	1.6	1.1	1.8	0.9	1.3	0.61
YPL177C	1.2	3.7	0.9	1.3	0.7	0.8	0.8	1.3	0.5	1.0	1.4	0.8	0.8	1.3	0.6	1.9	1.2	1.1	0.75
YGL056C	0.7	3.5	1.3	1.0	0.6	0.4	1.0	0.9	0.4	0.6	0.0	1.1	0.8	1.1	1.2	1.5	0.9	1.1	0.47
YBL101W-A	1.0	5.7	0.7	0.6	1.0	1.4	1.3	1.5	1.2	2.1	1.2	1.1	2.0	1.5	2.1	1.1	1.3	1.2	1.24
YER072W	1.6	2.3	1.6	1.3	1.2	1.5	0.7	1.2	0.5	1.1	1.7	1.1	0.6	1.5	0.9	1.1	1.7	1.7	1.69
YMR112C	1.2	4.2	0.9	1.2	1.0	0.7	1.5	1.6	1.4	1.3	0.9	1.0	0.9	1.8	0.9	1.4	1.1	1.6	0.57
YJR058C	1.3	2.0	1.3	1.5	1.1	1.6	1.3	1.2	1.9	2.6	1.2	0.7	0.8	1.8	0.8	1.2	1.3	1.2	1.00
YML055W	1.7	2.3	0.6	2.0	0.9	1.2	1.7	1.7	1.0	1.4	1.4	1.0	1.7	1.9	0.6	1.4	1.2	1.5	1.08
YDR080W	0.9	1.8	0.5	0.6	1.2	1.5	1.6	1.2	1.7	2.6	1.2	1.0	2.0	1.1	1.2	1.7	1.2	1.3	0.68

YNR030W	0.6	2.1	2.2	0.7	0.8	1.2	1.0	0.6	1.0	1.4	1.2	0.8	1.5	0.6	1.1	0.4	0.9	0.8	1.19
YNL196C	1.1	1.8	1.4	1.3	0.9	1.2	1.0	0.7	0.5	2.2	0.7	1.0	2.2	1.2	0.8	2.1	1.1	1.2	0.50
YOR148C	1.4	1.4	0.5	1.8	0.9	0.9	1.2	1.5	0.8	0.8	1.3	0.9	1.4	1.4	1.0	1.3	1.0	1.3	1.08
YER029C	1.0	1.6	0.4	1.9	1.7	1.2	1.1	1.5	1.4	1.1	0.8	0.9	0.9	1.4	1.1	1.7	0.9	1.3	1.20
YLR360W	0.9	2.0	0.5	0.7	1.9	1.4	1.7	1.3	0.9	1.3	0.9	0.9	0.7	1.1	0.8	2.1	1.2	1.4	0.53
YGR239C	1.3	1.3	0.7	1.3	1.2	2.3	1.2	1.5	0.5	3.8	1.4	1.0	1.0	1.4	1.3	1.1	1.1	1.3	0.49
YDL229W	0.9	1.9	0.4	0.6	1.2	1.0	1.3	1.2	1.4	0.9	1.6	0.9	1.0	1.3	1.2	1.0	1.2	1.1	0.76
YJR027W	0.8	1.9	0.8	0.7	1.2	1.5	2.0	1.0	1.2	1.3	1.1	0.8	1.3	1.1	2.3	0.7	0.7	1.1	4.88
YKL198C	1.2	1.4	0.8	0.2	0.9	1.0	1.2	0.6	0.0	0.8	1.4	0.7	1.9	6.6	2.6	0.7	1.0	0.8	0.17
YBR031W	1.1	0.8	4.1	1.4	1.4	0.7	0.5	1.0	0.1	1.0	0.9	1.0	0.3	0.4	0.9	0.7	1.0	0.8	7.58
YBR118W	1.3	0.8	2.9	1.2	1.0	1.3	1.0	1.3	0.5	0.9	1.0	0.8	0.8	0.7	1.6	0.6	1.2	0.9	8.91
YCR106W	0.9	1.1	2.8	1.1	0.8	1.4	0.9	0.8	2.0	1.2	1.2	0.8	1.2	0.8	1.3	1.2	1.1	1.2	0.76
YDR012W	0.9	0.8	3.9	1.2	1.1	0.9	0.5	1.1	0.3	0.7	0.9	1.2	0.2	0.4	0.8	0.7	1.0	0.7	7.07
YDR134C	1.0	0.7	3.9	1.9	0.8	1.1	0.4	0.6	0.1	0.5	1.9	0.6	0.4	0.5	0.8	0.9	0.7	1.1	5.84
YDR276C	1.5	1.6	6.1	1.4	0.7	1.1	1.0	1.1	1.1	2.7	1.4	0.9	1.1	1.3	2.2	3.6	1.3	2.4	2.48
YGR279C	0.9	0.7	3.6	1.0	1.2	1.6	0.8	0.6	0.3	0.7	0.9	0.7	0.3	0.4	1.3	0.8	1.0	0.8	3.77
YJL059W	1.0	1.7	3.1	0.8	0.9	1.6	1.1	0.8	1.7	1.6	1.8	1.0	1.6	1.3	0.9	0.8	1.1	1.0	0.39
YKL056C	1.3	0.7	2.6	1.4	1.7	0.9	0.5	1.0	0.1	0.7	1.1	0.8	0.1	0.7	0.9	0.6	0.8	1.2	6.68
YKL097W-A	1.5	1.3	4.2	1.3	1.2	0.9	0.2	0.7	0.0	0.4	1.6	0.7	0.2	0.6	2.0	0.8	1.1	1.4	4.01
YNL209W	0.9	0.9	2.7	0.9	1.3	0.9	0.5	1.1	0.2	0.8	0.9	0.9	0.5	0.6	0.9	0.3	0.6	0.6	8.06
YNL307C	0.8	0.6	3.1	1.3	1.0	1.9	0.9	0.9	1.0	0.9	1.0	1.0	1.0	0.7	0.6	1.0	1.0	1.3	2.79
YPR028W	1.0	1.1	4.0	1.7	1.0	1.4	0.8	0.7	0.5	0.8	1.4	0.6	1.7	0.8	0.9	1.3	1.2	1.7	4.06
YPR149W	1.0	1.1	5.9	1.7	1.7	1.6	2.1	0.6	1.2	1.8	1.1	0.7	1.4	1.3	1.0	2.2	1.1	1.1	2.65
YAL016W	0.8	1.0	2.8	0.9	0.9	0.9	1.1	1.0	1.2	1.9	0.9	0.8	1.4	0.9	1.1	1.1	0.8	1.3	1.00
YBR283C	0.6	0.7	1.9	1.2	1.4	2.2	0.8	0.8	1.5	1.2	2.0	0.8	0.8	0.6	1.4	0.9	0.9	0.9	2.62
YBR286W	0.7	1.4	3.8	1.2	1.3	1.5	1.3	0.9	1.2	1.6	1.0	1.1	1.8	1.5	1.3	2.6	0.8	1.6	2.98
YCL008C	0.8	1.1	1.8	1.2	1.2	0.9	0.9	0.7	0.9	1.4	0.9	0.9	1.0	0.9	1.4	0.6	0.9	0.9	0.47
YGR069W	1.0	1.2	2.0	0.9	1.1	1.4	1.1	0.7	0.8	0.7	1.3	1.4	1.6	1.0	2.4	1.2	1.2	1.3	0.97
YDL061C	1.4	0.5	2.9	0.9	1.3	1.1	0.5	1.0	0.0	0.5	1.4	1.0	0.1	0.7	1.0	0.6	1.1	1.0	4.40
YDR151C	1.3	1.0	2.3	1.8	0.8	0.7	0.8	1.5	2.6	2.8	2.1	0.9	2.8	1.1	0.6	1.2	0.8	1.1	0.96
YDR382W	1.3	0.5	2.4	1.2	1.1	0.6	0.4	1.2	0.0	0.4	1.2	0.7	0.1	0.7	1.1	0.4	1.0	1.0	6.40
YDR385W	0.6	0.4	3.5	0.9	1.1	0.5	0.4	0.7	0.2	0.5	0.9	0.9	0.3	0.5	0.8	0.3	0.6	0.4	7.27

YDR407C	0.7	1.0	2.0	0.7	0.8	1.2	1.4	0.9	1.5	1.7	1.2	1.0	1.3	0.8	1.3	1.0	0.9	0.9	0.52
YGL206C	0.4	3.5	2.0	0.5	0.6	0.8	0.8	0.5	0.7	0.7	0.9	0.7	1.1	0.8	1.3	0.6	0.8	1.0	1.04
YGR172C	0.6	1.3	2.5	1.3	0.6	0.9	1.0	0.8	0.4	1.1	0.8	0.8	0.7	1.1	1.9	1.0	1.1	1.1	0.94
YIL015W	1.1	1.7	2.0	2.5	0.9	0.4	0.9	0.9	0.3	1.1	0.8	0.9	0.8	5.9	1.1	0.8	0.8	1.0	0.17
YIL018W	1.0	0.4	2.3	1.4		0.9	0.4	0.8	0.0	0.3	1.2	0.6	0.0	0.6	0.6	0.4	0.8	0.8	6.27
YJL138C	1.0	0.7	2.3	1.4	0.9	0.8	0.8	1.2	0.2	0.7	1.2	0.8	0.3	0.7	0.9	0.6	0.9	1.0	7.38
YJL191W	1.0	0.4	2.2	0.7		1.3	1.0	0.8	0.0	0.4	1.1	1.0	0.9	1.1	0.7	2.2	1.0	1.0	1.86
YJR047C	1.1	0.8	2.6	1.1	1.1	1.1	0.4	0.9	0.7	0.5	1.1	0.9	0.9	0.9	0.6	0.8	0.8	0.9	5.29
YJR119C	0.9	1.0	2.0	1.0	0.9	1.4	1.1	1.6	0.5	1.3	1.1	0.9	1.2	1.3	1.5	1.0	0.7	0.9	0.30
YJR123W	1.2	0.6	2.2	1.0	1.3	1.0	0.4	1.2	0.0	0.5	0.9	0.8	0.1	0.6	1.1	0.4	0.8	0.9	7.84
YJR145C	0.8	0.7	2.3	1.3		0.4	0.4	1.0	0.0	0.4	0.8	0.6	0.0	0.6	0.8	0.5	0.8	0.9	4.82
YLR110C	1.4	0.8	2.7	1.2	1.7	0.9	0.4	0.8	0.3	0.8	3.2	0.7	0.5	0.5	1.7	0.8	0.9	1.1	3.99
YLR264W	1.1	0.4	2.2	1.0	1.1	0.7	0.4	1.0	0.0	0.3	0.8	1.1	0.3	1.2	1.2	0.5	1.0	1.1	3.91
YLR340W	0.8	0.4	2.6	1.0	0.6	0.7	0.3	0.9	0.0	0.5	1.4	0.9	0.1	0.5	1.3	0.2	0.9	0.7	6.55
YLR388W	1.6	0.4	1.9	1.0	2.5	0.7	0.5	1.2	0.2	0.7	1.0	0.6	0.1	0.8	0.6	0.5	0.8	1.0	4.48
YMR092C	0.6	1.2	1.9	1.3	0.8	0.9	1.2	0.9	1.5	1.7	1.2	0.9	1.7	0.8	1.1	1.2	0.9	1.3	1.43
YMR101C	1.1	1.8	1.9	2.9	0.9	0.4	0.9	0.8	-4.0	1.6	-0.3	0.7	0.8	1.1	1.0	0.9	0.7	0.8	0.16
YNL069C	1.2	0.3	2.8	2.3	0.7	0.4	0.3	1.0	0.0	0.4	1.0	0.6	0.1	0.9	1.0	0.3	0.8	0.6	4.03
YNL135C	1.1	0.9	2.0	1.4	1.7	0.9	0.8	0.5	0.7	0.5	0.7	0.8	0.9	0.5	1.0	1.4	1.2	1.7	3.05
YOL039W	1.2	0.3	3.9	0.7	1.3	0.4	0.3	1.0	0.0	0.9	1.1	0.7	0.1	0.5	0.8	0.4	0.7	0.7	4.94
YOL120C	1.0	0.3	2.3	0.8	1.5	0.3	0.4	0.8	0.0	0.3	1.0	0.7	0.1	0.6	0.6	0.3	0.6	0.8	4.42
YOR230W	1.2	2.3	3.0	1.0	0.9	1.1	0.6	0.6	0.6	0.7	1.6	1.4	1.5	0.7	0.6	1.6	1.2	1.6	1.76
YOR298W	0.9	0.9	3.2	0.5	1.5	0.9	0.6	0.7	0.6	1.0	0.1	0.7	1.1	2.1	1.2	0.5	1.0	0.8	0.41
YPL048W	0.7	0.7	2.6	1.2	0.7	0.6	0.6	0.8	1.6	0.6	1.7	1.0	0.9	0.6	1.5	1.3	1.2	1.0	2.11
YPL179W	1.0	1.5	2.4	1.0	1.1	1.6	1.2	0.8	1.2	1.1	1.1	1.0	1.3	0.8	1.2	1.4	1.3	1.3	1.38
YPL218W	1.5	0.9	2.5	1.7	1.1	1.5	1.3	1.4	1.1	1.2	1.1	1.2	1.0	1.5	1.1	1.7	1.1	1.8	2.98
YPL220W	1.3	0.9	2.3	1.4	1.1	1.3	0.6	1.2	0.0	0.5	1.3	0.5	0.1	0.6	0.6	0.5	1.1	1.1	8.33
YPR080W	1.3	1.3	2.8	1.2	1.4	1.4	0.9	1.3	0.7	1.1	1.0	1.0	1.3	0.6	1.5	0.6	1.1	1.0	8.03
YPR181C	0.5	0.8	2.3	0.6	1.0	2.0	1.3	0.5	1.0	0.7	1.3	1.0	1.7	2.4	1.5	1.6	1.8	1.6	1.84
YBR290W	1.3	1.4	0.8	3.0	1.0	1.1	1.4	1.5	2.0	1.8	1.2	1.0	1.7	1.4	0.9	1.3	1.2	2.1	1.34
YCR091W	1.3	1.1	0.6	2.2	1.3	1.3	1.3	1.1	0.8	1.2	0.8	1.1	1.3	1.3	0.7	2.7	1.3	1.4	0.22
YFL026W	1.0	0.8	1.2	5.0	1.4	1.0	1.2	1.3	0.6	1.5	1.3	0.8	1.1	1.1	1.0	1.0	1.0	1.0	0.27

YOR003W	0.9	1.1	1.1	1.1	0.9	1.6	1.1	0.9	1.1	0.9	1.6	1.3	0.7	0.8	1.0	1.0	1.2	2.8	1.3	1.0	1.1	0.30
YCR038C	0.9	1.1	0.9	0.9	0.9	0.7	0.7	0.9	0.7	0.8	0.7	1.0	1.1	0.8	1.0	1.0	1.1	0.7	1.0	0.9	1.1	0.31
YDL119C	1.0	0.8	0.6	1.3	1.1	1.3	1.1	1.1	1.5	0.9	1.1	1.2	0.5	1.0	1.1	1.0	1.2	0.5	1.2	1.0	1.0	0.77
YDL220C	0.9	1.3	1.1	1.1	0.8	0.2	1.3	0.8	1.0	1.0	1.6	0.9	1.6	0.8	1.1	0.9	0.8	1.6	0.8	1.1	0.9	0.24
YDR125C	1.1	0.9	1.0	0.8	1.2	0.7	1.9	1.0	1.0	0.8	0.9	1.0	0.8	0.8	0.9	1.2	0.8	0.8	1.7	0.9	1.2	0.35
YDR225W	1.0	0.6	0.5	0.4	0.8	0.3	0.7	2.7	0.4	0.2	0.2	0.8	0.1	0.8	1.1	1.8	0.8	0.1	0.8	1.1	1.8	5.54
YER066W	0.9	0.7	1.3	1.3	0.7	1.7	1.4	1.5	0.7	0.9	0.9	1.1	0.5	3.3	1.1	1.1	0.66	0.5	3.3	1.1	1.1	0.66
YER076C	0.8	0.9	1.2	0.8	0.7	0.2	1.2	0.7	0.7	1.1	0.9	0.9	0.8	1.3	1.0	1.0	0.33	0.8	1.3	1.0	1.0	0.33
YFR006W	0.9	1.8	1.1	1.4	1.0	-1.6	0.7	1.2	1.0	0.9	0.9	0.9	0.8	1.2	0.9	1.3	1.54	0.8	1.2	0.9	1.3	1.54
YGL208W	0.9	1.8	1.1	0.6	0.7	1.4	1.3	1.3	0.8	1.5	1.4	1.3	1.1	3.1	0.8	1.3	0.32	1.8	3.1	0.8	1.3	0.32
YGR023W	1.0	0.9	1.1	1.2	1.2	1.2	3.2	2.4	0.9	1.4	1.3	0.8	0.2	0.4	1.2	1.5	0.69	1.1	0.9	1.2	1.5	0.69
YGR108W	0.9	3.9	0.3	0.1	0.5	0.0	0.1	0.5	0.4	0.3	0.3	0.8	0.2	0.4	0.7	1.0	0.93	0.2	0.4	0.7	1.0	0.93
YHR195W	1.1	1.5	0.6	1.0	1.3	1.6	0.8	1.4	0.9	1.2	1.2	1.2	0.7	3.7	1.0	1.5	1.12	0.7	3.7	1.0	1.5	1.12
YIL050W	1.0	1.3	1.3	0.7	1.1	1.2	1.3	0.9	1.0	1.0	1.0	1.3	0.6	2.7	1.0	1.1	0.52	0.6	2.7	1.0	1.1	0.52
YJR050W	1.0	0.6	0.7	1.4	1.1	1.8	2.0	0.8	0.8	1.9	1.3	1.3	0.9	1.5	0.9	1.1	0.85	0.9	1.5	0.9	1.1	0.85
YKL093W	1.0	1.6	0.8	0.7	0.9	1.5	1.6	0.9	0.9	1.2	1.2	1.1	0.8	2.9	0.8	1.0	0.38	0.8	2.9	0.8	1.0	0.38
YMR053C	1.1	1.0	0.8	1.3	0.9	1.0	2.2	1.4	1.3	0.9	1.5	1.3	2.4	2.3	1.1	1.6	0.31	2.4	2.3	1.1	1.6	0.31
YNL139C	0.8	1.1	0.8	1.0	1.0	0.9	0.6	0.7	0.8	1.2	1.2	0.7	1.4	1.1	1.1	1.0	0.47	1.4	1.1	1.1	1.0	0.47
YOR122C	1.0	0.7	1.8	1.3	1.2	1.0	1.1	0.9	1.5	0.8	1.0	1.2	1.6	1.5	1.0	2.2	3.06	1.6	1.5	1.0	2.2	3.06
YOR312C	1.2	0.4	1.0	0.6	0.6	1.2	0.0	0.3	0.8	0.7	0.1	0.7	0.7	0.5	1.2	1.0	5.24	0.7	0.5	1.2	1.0	5.24
YOR327C	2.3	1.8	0.5	1.4	1.4	1.9	1.4	2.2	2.1	1.0	2.1	1.5	0.9	1.5	2.2	2.1	1.46	0.9	1.5	2.2	2.1	1.46
YPL001W	0.9	0.9	1.0	0.7	1.0	1.2	0.7	1.0	1.3	0.7	0.8	1.3	1.3	0.8	0.9	1.2	0.74	1.3	0.8	0.9	1.2	0.74
YPL230W	1.2	1.7	1.8	1.0	1.1	1.0	0.9	2.7	3.1	1.0	2.0	1.3	0.7	2.0	1.0	1.6	0.47	0.7	2.0	1.0	1.6	0.47
YER025W	0.6	0.7	0.6	1.5	1.0	1.1	0.4	0.6	1.2	0.7	0.6	2.1	0.8	2.6	1.8	2.3	1.96	0.8	2.6	1.8	2.3	1.96
YHR185C	0.9	1.1	1.4	1.0	1.3	0.8	-0.6	0.9	0.7	0.8	0.4	1.7	1.3	3.2	1.4	3.0	1.64	1.3	3.2	1.4	3.0	1.64
YIL076W	1.3	0.6	1.1	0.6	0.5	1.3	1.0	1.4	1.1	0.8	0.8	1.4	1.0	0.8	1.2	2.5	3.73	1.0	0.8	1.2	2.5	3.73
YMR238W	1.9	1.3	1.1	1.3	1.2	0.9	1.3	1.4	1.2	1.0	1.5	1.2	2.3	1.4	2.2	2.4	1.36	2.3	1.4	2.2	2.4	1.36
YBR009C	1.6	0.8	0.4	1.0	0.5	1.2	0.6	0.6	0.8	0.5	0.4	1.1	0.2	0.4	1.0	2.4	7.00	0.2	0.4	1.0	2.4	7.00
YBR010W	1.0	0.8	0.5	1.1	0.8	1.3	0.5	0.7	1.0	0.7	0.4	1.0	0.3	0.8	1.1	2.3	7.25	0.3	0.8	1.1	2.3	7.25
YCL067C	1.2	1.1	0.3	1.7	1.3	1.7	1.4	1.9	1.6	1.0	1.4	2.1	2.2	1.7	0.8	2.2	3.15	2.2	1.7	0.8	2.2	3.15
YCR096C	1.1	0.9	0.4	1.6	1.2	1.5	1.2	1.6	1.4	1.0	1.0	2.1	2.1	1.8	1.0	2.1	2.34	2.1	1.8	1.0	2.1	2.34
YDL137W	1.4	1.1	1.2	1.2	1.0	1.1	1.1	1.3	1.5	1.6	1.7	1.4	1.3	2.3	1.3	2.2	4.95	1.3	2.3	1.3	2.2	4.95

YDL192W	1.4	1.0	0.6	1.2	1.4	1.0	1.7	1.5	0.8	0.6	1.3	1.1	0.9	1.2	1.3	1.3	1.1	2.3	5.57
YDR224C	1.1	0.7	0.8	0.9	1.2	1.0	0.8	1.4	1.1	1.3	1.1	0.7	0.5	1.7	0.3	1.1	1.2	2.2	5.62
YDR378C	1.3	1.3	1.4	1.3	1.0	1.0	1.4	1.5	0.5	1.3	0.8	0.9	0.8	1.4	0.8	1.0	1.7	2.2	2.40
YMR197C	1.3	1.6	1.4	1.9	1.1	1.6	1.5	1.4	1.9	2.5	1.0	1.1	1.5	4.1	1.7	1.9	1.2	2.2	1.20
YOL109W	2.0	2.0	1.5	1.8	1.0	1.3	1.2	1.5	0.1	1.1	1.0	0.8	0.5	1.4	1.0	0.8	1.6	2.2	4.13
YPL010W	1.0	1.1	0.9	1.0	1.4	1.0	1.9	1.5	1.7	1.5	1.3	1.1	1.1	1.3	1.2	1.3	1.3	2.0	3.25
YHR132C	0.8	0.7	1.7	1.4	1.0	0.7	0.8	0.8	0.9	1.1	1.1	0.8	1.2	0.9	1.4	2.3	0.8	1.3	1.52
YJL141C	1.0	0.8	1.0	1.6	1.5	1.1	1.1	0.9	1.2	1.3	1.2	0.8	1.4	0.8	0.8	2.2	1.4	1.6	0.94
YKR098C	1.0	1.1	1.2	1.7	1.1	1.8	1.7	1.3	1.4	2.7	1.9	1.1	1.4	1.4	0.9	3.9	1.1	1.6	0.55
YLR206W	0.7	1.6	1.4	1.1	1.1	0.5	0.7	0.8	1.5	1.0	1.3	0.8	1.4	0.8	2.4	2.3	1.1	1.2	0.72
YAL055W	1.2	1.0	0.9	1.0	1.4	1.3	1.5	1.9	1.0	1.4	1.3	1.2	1.5	1.6	1.1	2.6	1.3	1.3	0.62
YAR062W	1.2	1.8	1.4	0.7	1.0	0.6	1.3	0.9	0.4	0.9	-1.1	0.8	1.2	1.1	1.3	2.4	0.9	1.0	0.32
YBL102W	0.8	1.0	1.4	1.2	0.9	2.5	1.6	0.8	2.3	1.1	1.2	0.9	1.7	1.1	1.1	2.0	2.4	1.5	1.26
YBR161W	1.2	0.8	2.3	0.7	1.1		3.0	0.9	0.4	0.4	1.1	0.6	1.0	0.9	1.5	2.1	1.5	2.2	0.72
YGR039C	1.9	2.1	0.3	0.9	1.9	1.5	1.4	1.6	1.8	2.2	1.2	0.8	1.0	1.7	1.9	2.1	1.0	2.1	1.73
YDL018C	1.3	0.9	0.9	1.1	1.8	1.4	1.2	1.3	1.0	1.0	0.9	0.7	1.0	1.5	1.1	3.1	1.5	1.7	0.84
YDR022C	1.1	1.2	0.8	0.9	1.5	2.2	1.8	1.4	0.9	1.4	0.9	0.7	1.3	2.1	1.0	2.1	1.3	1.2	0.47
YDR181C	1.1	1.2	0.8	1.4	0.9	0.7	1.0	1.2	2.0	0.9	0.8	0.7	0.7	1.3	1.2	2.0	0.8	1.2	0.48
YGR036C	0.9	0.8	0.9	1.1	1.3	1.3	1.0	0.8	0.9	0.9	0.9	1.0	1.3	1.0	0.7	2.0	1.3	1.1	1.12
YGR120C	1.2	1.8	0.5	1.0	1.8	1.5	1.6	1.3	0.3	1.2	1.1	0.7	0.5	1.0	1.2	1.9	1.1	1.2	0.36
YGR131W	0.8	2.1	1.9	1.1	0.9	1.9	1.1	1.1	1.9	5.8	1.1	0.5	1.4	2.0	0.8	2.6	1.3	1.0	0.41
YGR167W	1.1	1.1	0.6	1.5	0.9	1.7	1.4	1.4	1.4	1.9	1.1	1.1	1.6	1.7	1.6	2.8	1.3	1.7	1.79
YHL024W	1.2	0.8	1.6	1.1	1.5	1.2	1.3	0.8	2.1	3.6	1.1	1.6	1.6	2.1	2.9	3.8	1.4	1.4	0.58
YJL113W	1.2	1.9	1.2	1.2		0.7	1.2	1.3	1.3	2.1	1.2	0.7	0.9	1.3	1.7	2.1	0.9	1.5	0.41
YJL146W	1.3	1.9	1.2	2.0	0.8	0.7	1.3	1.0	1.0	1.7	-1.1	1.1	0.8	1.5	1.2	1.8	1.0	1.3	0.30
YJR019C	0.8	1.8	1.9	1.6	1.1	0.8	0.9	0.7	1.1	0.6	2.4	1.1	1.4	0.8	1.1	2.6	1.8	1.4	0.33
YJR049C	1.0	1.2	1.0	1.0	0.7	0.6	1.0	1.2	1.4	1.4	1.6	1.0	2.1	1.2	1.2	1.7	0.9	1.2	0.44
YLR078C	0.9	1.1	0.7	1.4		0.8	1.2	1.1	0.8	1.1	2.9	1.0	0.8	1.2	0.6	2.2	1.2	1.2	1.02
YNR037C	0.9	0.9	0.9	1.7	1.2	0.7	1.7	1.1	1.3	1.7	1.5	0.7	2.0	1.2	0.8	1.9	1.4	1.6	1.34
YOR028C	1.4	0.7	1.1	2.3	1.6	1.0	1.2	1.5	1.2	2.0	1.5	0.6	0.8	1.3	1.1	3.7	0.8	1.7	0.78

機能未知の酵母遺伝子 2400 のうち約 700 が重金属、農薬、界面活性剤等の毒性を有する化学物質いずれかにより mRNA の発現が誘導され (表 1)、ミトコンドリア局在タンパク質遺伝子 167 (表 2)、遺伝子修復系タンパク質遺伝子 52 (表 3)、エネルギー系タンパク質遺伝子 161 (表 4)、トランスポート促進タンパク質遺伝子 142 (表 5)、ストレスタンパク質遺伝子 90 (表 6)、代謝系タンパク質遺伝子 142 (表 7)、脱毒性蛋白質遺伝子 60 (表 8)、その他のカテゴリーに属する遺伝子 507 (表 9) の mRNA の発現が毒性を有する化学物質のいずれかにより誘導されることが示される。ここで、化学物質存在下における発現 mRNA 量 / 化学物質不存在下における発現 mRNA 量が 2 倍以上のものを有意とした。

このように毒性物質が存在すると特定の酵母遺伝子の発現が誘導されるのは、毒性物質が該遺伝子のプロモーターを活性化することによると考えられる。そこで本発明者は、酵母遺伝子のプロモーターを含むポリヌクレオチド配列にマーカータンパク質をコードするポリヌクレオチドを作動可能に連結したポリヌクレオチド配列を含むベクターを調製し、該ベクターで酵母細胞を形質転換した。このような細胞を用いると、発現するマーカータンパク質を検出することにより、毒性物質の検出を簡便に行うことができる (以下このような検出を「プロモーターアッセイ」と呼ぶことがある)。以下の実施例にはそのようなベクターの調製、該ベクターを用いる酵母細胞の形質転換、形質転換した細胞による毒性物質の検出を示す。

プロモーターアッセイ法は mRNA の細胞内の変動をマーカー遺伝子の発現レベルに置き換えて、遺伝子発現量を非破壊で測定する方法である。化学物質を検出するために選択した遺伝子は化学物質不存在下においても発現しており、従ってマーカータンパク質も化学物質不存在下においても存在する。本発明の方法は被検試料を付加した時の酵母遺伝子の挙動をマーカータンパク質の発現量の変化によって計測し、毒性化学物質の存在およびその種類を推定するものである。このため、化学物質不存在下においてはマーカータンパク質の産生が少ない方が望ましく、また化学物質存在下においてマーカータンパク質の産生が多い方が望ましい。このため、プロモーターアッセイにおける酵母遺伝子の選択にあたっては、

強度（コントロール細胞における遺伝子の発現量／全遺伝子の発現量の平均値）が、好ましくは1.5以下、より好ましくは1以下、さらに好ましくは0.5以下であり、発現倍率（化学物質存在下の発現mRNA／化学物質不存在下の発現mRNA）が好ましくは3以上、より好ましくは10以上、さらに好ましくは20以上であるものを選択する。

実施例2

酵母遺伝子YKL071wのプロモーター配列を含むポリヌクレオチドをPCRにより増幅するためのプライマーを作成した。プライマーはプライマー設計用のソフトウェアであるOligo4.0-S, SequencherIマッキントッシュ版を用いて設計し、アッパープライマーの塩基配列は、

CGCAATAATACTGGAAACATCAA (配列番号7)

であり、ロウワープライマーの塩基配列は、

ATCGACTTTGTTTGCTTAGAAT (配列番号8)

とした。PCRはテンプレートとして酵母の染色体 (*Saccharomyces cerevisiae* S288C, Cat. 40802, Reserch Genetics, Inc.) を用い試薬は市販のキット (KOD DNA Polymerase ; コードKOD-101、Toyobo) を使用した。

使用するベクターは大腸菌と酵母の両方で複製されるYEp型シャトルベクターであるpYES2 (pYES2, Cat no:V825-20, Invirtogen Corporation, USA) (R. W. オールド、S. B. プリムローズ 遺伝子操作の原理 原書第5版, 培風館, pp. 234-263, 2000)) を用いた。また、マーカートンパク質GFPをコードするポリヌクレオチド (配列番号6) はベクターpQBI 63 (Cat no. 54-0082, 和光純薬工業(株)) のGFPの部分を用いた。まず、pYES2の multiple cloning site の中にGFPのポリヌクレオチドを挿入したベクター作成した。その後、pYES2のGAL1プロモーターの部分をもくとする酵母遺伝子であるYKL071wのプロモーター配列を含むポリヌクレオチド (配列番号1) で置換して、目的とするプラスミドベクターを得た。GFPおよびプロモーター配列を含むポリヌクレオチドの挿入の操作は、適当な制限酵素を選択して行った。

次にこのプラスミドベクターで酵母*Saccharomyces cerevisiae* W303を形質転換した。形質転換の手順を以下に示す。

1) 酵母細胞 *Saccharomyces cerevisiae* W303 を 200ml の SD 培地で OD660 が 0.5 になるまで振とう培養する。

2) 集菌して 5 ml の TE-buffer にけん濁する。

3) 2.5M の リチウムアセテイト 250 μ L を添加する。

5 4) 300 μ l ずつ分注し 10 μ l の上記プラスミドベクターを添加し、30℃ 30分培養する。

5) 700 μ l の 50% PEG4000 を付加し、30℃ 60分振とう培養する。

6) ヒートショック (42℃、5分) 後、急冷する。

7) 1M ソルビトールで 2 回洗浄する。

10 8) 最小栄養培地で作成した寒天プレートに播種する。

形質転換の確認は選択培地 (SD 培地 (Yeast nitrogen base without amino acids (Difco 0919-15) + グルコース + アミノ酸 (アデニン、ヒスチジン、トリプトファン) により行った。選択培地の寒天プレートに生育したコロニーはさらに、アミノ酸の栄養要求性を確認した。

15 形質転換した酵母細胞は、SC-YKL071w-pQBI と命名し、茨城県つくば市東 1 丁目 1 番地 1 中央第 6、独立行政法人産業技術総合研究所特許生物寄託センターに国際寄託されている (受託日: 平成 14 年 8 月 19 日、受託番号 FERM BP-8161)。

実施例 3

20 酵母遺伝子 YCR102c のプロモーター配列を含むポリヌクレオチドを PCR により増幅するためのプライマーを作成した。プライマーは、プライマー設計用のソフトウェアである Oligo4.0-S, Sequencher I マッキントッシュ版を用いて設計し、アッパープライマーの塩基配列は

AGGTGCGATAGTGGGAATAAGA (配列番号 9)

であり、ロウワープライマーの塩基配列は

25 GGTTTCTGGAATTGCAACTGC (配列番号 10)

とした。PCR はテンプレートとして酵母の染色体 (*Saccharomyces cerevisiae* S288C, Cat. 40802, Reserch Genetics, Inc.) を用い試薬は市販のキット (KOD DNA Polymerase; コード KOD-101、Toyobo) を使用した。

使用するベクターは大腸菌と酵母の両方で複製される YEp 型シャトルベクター

である pYES2 (pYES2, Cat No:V825-20, Invitrogen Corporation, USA) (R. W. オールド、S. B. プリムローズ 遺伝子操作の原理 原書第5版, 培風館, pp. 234-263, 2000)) を用いた。また、マーカータンパク質 GFP をコードするポリヌクレオチド (配列番号 6) はベクター pQBI 63 (Cat no. 54-0082, 和光純薬工業 (株)) の GFP の部分を用いた。まず、pYES2 の multiple cloning site の中に GFP のオリゴヌクレオチドを挿入したベクターを作成した。その後、pYES2 の GAL1 プロモーターの部分を目的とする酵母遺伝子である YCR102c のプロモーター配列を含むポリヌクレオチド (配列番号 2) で置換して、目的とするプラスミドベクターを得た。GFP およびプロモーター配列を含むポリヌクレオチドの挿入の操作は、適当な制限酵素を選択して行った。

次にこのプラスミドベクターで酵母 *Saccharomyces cerevisiae* W303 を形質転換した。形質転換の手順を以下に示す。

- 1) 酵母細胞 *Saccharomyces cerevisiae* W303 を 200ml の SD 培地で OD660 が 0.5 になるまで振とう培養する。
- 2) 集菌して 5 ml の TE-buffer にけん濁する。
- 3) 2.5M の リチウムアセテイト 250 μ L を添加する。
- 4) 300ml ずつ分注し 10 μ L の上記プラスミドベクターを添加し、30℃ 30分培養する。
- 5) 700ml の 50% PEG4000 を付加し、30℃ 60分振とう培養する。
- 6) ヒートショック (42℃、5分) 後、急冷する。
- 7) 1M ソルビトールで 2 回洗浄する。
- 8) 最小栄養培地で作成した寒天プレートに播種する。

組み込みの確認は選択培地 (SD 培地 (Yeast nitrogen base without amino acids (Difco 0919-15) + グルコース + アミノ酸 (アデニン、ヒスチジン、トリプトファン)) により行った。選択培地の寒天プレートに生育した酵母のコロニーはさらに、アミノ酸の栄養要求性を確認した。

形質転換した酵母細胞を SC-YCR102c-pQBI と命名し、茨城県つくば市東 1 丁目 1 番地 1 中央第 6、独立行政法人産業技術総合研究所特許生物寄託センターに国際寄託されている (受託日: 平成14年8月19日、受託番号 FERM BP-8159) 。

実施例 4

酵母遺伝子 Y O R 3 8 2 w のプロモーター配列を含むポリヌクレオチドをPCRにより増幅するためのプライマーを作成した。プライマーはプライマー設計用のソフトウェアであるOligo4.0-S, SequencherIマッキントッシュ版を用いて設計し、

GCTTTTCTCGCTTCGTTATCACC (配列番号 1 1)

であり、ロウワープライマーの塩基配列は、

TATTATTGTTTTGTGATGGCTT (配列番号 1 2)

とした。PCRはテンプレートとして酵母の染色体 (*Saccharomyces cerevisiae* S288C, Cat. 40802, Reserch Genetics, Inc.) を用い試薬は市販のキット (KOD DNA Polymerase ; コードKOD-101、Toyobo) を使用した。

使用するベクターは大腸菌と酵母の両方で複製されるYEp型シャトルベクターである p YES2 (pYES2, Cat no:V825-20, Invirtogen Corporation, USA) (R. W. オールド、S. B. プリムローズ 遺伝子操作の原理 原書第5版, 培風館, pp. 234-263, 2000)) を用いた。また、マーカートンパク質 G F P をコードするポリヌクレオチド (配列番号 6) はベクター pQBI 63 (Cat no. 54-0082, 和光純薬工業 (株)) の GFP の部分を用いた。まず、p YES2 の multiple cloning site の中に G F P のポリヌクレオチドを挿入したベクター作成した。その後、p YES2 の GAL1 プロモーターの部分をもくとする酵母遺伝子である Y O R 3 8 2 w のプロモーター配列を含むポリヌクレオチド (配列番号 3) で置換して、目的とするプラスミドベクターを得た。G F P およびプロモーター配列を含むポリヌクレオチドの挿入の操作は、適当な制限酵素を選択して行った。

次にこのプラスミドベクターで酵母 *Saccharomyces cerevisiae* W303 を形質転換した。形質転換の手順を以下に示す。

- 1) 酵母細胞 *Saccharomyces cerevisiae* W303 を 200ml の SD 培地で OD660 が 0. 5 になるまで振とう培養する。
- 2) 集菌して 5 m l の TE-buffer にけん濁する。
- 3) 2. 5M の リチウムアセテイト 250 μ L を添加する。
- 4) 300 μ l ずつ分注し 10 μ l の上記プラスミドベクターを添加し、3 0 $^{\circ}$ C 3 0 分

培養する。

5) 700 μ l の 50%PEG4000を付加し、30℃60分振とう培養する。

6) ヒートショック (42℃、5分) 後、急冷する。

7) 1Mソルビトールで2回洗浄する。

5 8) 最小栄養培地で作成した寒天プレートに播種する。

形質転換の確認は選択培地 (SD培地 (Yeast nitrogen base without amino acids (Difco 0919-15)+グルコース+アミノ酸 (アデニン、ヒスチジン、トリプトファン) により行った。選択培地の寒天プレートに生育したコロニーはさらに、アミノ酸の栄養要求性を確認した。

10 形質転換した酵母細胞は、SC-YOR382W-pQBIと命名し、茨城県つくば市東1丁目1番地1 中央第6、独立行政法人産業技術総合研究所特許生物寄託センターに国際寄託されている (受託日:平成14年8月19日、受託番号FERM BP-8160)。

実施例 5

15 酵母遺伝子 Y L L 0 5 7 c のプロモーター配列を含むポリヌクレオチドをPCRにより増幅するためのプライマーを作成した。プライマーはプライマー設計用のソフトウェアであるOligo4.0-S, SequencherIマッキントッシュ版を用いて設計し、アッパープライマーの塩基配列は、

GCTAACGAACAGGATGGTATTGA (配列番号13)

であり、ロウワープライマーの塩基配列は、

20 ATTTTAACTGGGTTACTGTGCT (配列番号14)

とした。PCRはテンプレートとして酵母の染色体 (*Saccharomyces cerevisiae* S288C, Cat. 40802, Reserch Genetics, Inc.) を用い試薬は市販のキット (KOD DNA Polymerase ; コードKOD-101、Toyobo) を使用した。

25 使用するベクターは大腸菌と酵母の両方で複製されるYEp型シャトルベクターである pYES2 (pYES2, Cat no:V825-20, Invirtogen Corporation, USA) (R. W. オールド、S.B. プリムローズ 遺伝子操作の原理 原書第5版, 培風館, pp. 234-263, 2000)) を用いた。また、マーカートンパク質GFPをコードするポリヌクレオチド (配列番号6) はベクターpQBI 63 (Cat no. 54-0082, 和光純薬工業 (株)) のGFPの部分を用いた。まず、pYES2の multiple cloning site の中にG

F P のポリヌクレオチドを挿入したベクターを作成した。その後、p YES2のGAL1プロモーターの部分をもくとする酵母遺伝子であるY L L 0 5 7 cのプロモーター配列を含むポリヌクレオチド（配列番号4）で置換して、もくとするプラスミドベクターを得た。G F Pおよびプロモーター配列を含むポリヌクレオチドの挿入の操作は、適当な制限酵素を選択して行った。

次にこのプラスミドベクターで酵母*Saccharomyces cerevisiae* W303を形質転換した。形質転換の手順を以下に示す。

- 1) 酵母細胞*Saccharomyces cerevisiae* W303を200mlのSD培地でOD660が0.5になるまで振とう培養する。
- 2) 集菌して5 mlのTE-bufferにけん濁する。
- 3) 2.5Mのリチウムアセテイト250 μ Lを添加する。
- 4) 300 μ lずつ分注し10 μ lの上記プラスミドベクターを添加し、30℃30分培養する。
- 5) 700 μ lの50%PEG4000を付加し、30℃60分振とう培養する。
- 6) ヒートショック（42℃、5分）後、急冷する。
- 7) 1Mソルビトールで2回洗浄する。
- 8) 最小栄養培地で作成した寒天プレートに播種する。

形質転換の確認は選択培地（SD培地（Yeast nitrogen base without amino acids (Difco 0919-15) + グルコース + アミノ酸（アデニン、ヒスチジン、トリプトファン））により行った。選択培地の寒天プレートに生育したコロニーはさらに、アミノ酸の栄養要求性を確認した。

形質転換した酵母細胞は、SC-YLL057C-pQBIと命名し、茨城県つくば市東1丁目1番地1 中央第6、独立行政法人産業技術総合研究所特許生物寄託センターに寄託されている（受託日：平成13年7月27日、受託番号：FERM P-18439）。その後、国際寄託へ移管された（受託番号：FERM BP-8158、国際寄託への変更日：平成14年8月19日）。

実施例6

酵母遺伝子Y L R 3 0 3 wのプロモーター配列を含むポリヌクレオチドをPCRにより増幅するためのプライマーを作成した。プライマーは、プライマー設計用

のソフトウェアであるOligo4.0-S, SequencherIマッキントッシュ版を用いて設計し、アッパープライマーの塩基配列は

TCGTTTTCTACTTTCTTCTGCTG (配列番号15)

であり、ロウワープライマーの塩基配列は

5 TGTATGGATGGGGGTAATAGAA (配列番号16)

とした。PCRはテンプレートとして酵母の染色体 (*Saccharomyces cerevisiae* S288C, Cat. 40802, Reserch Genetics, Inc.) を用い試薬は市販のキット (KOD DNA Polymerase ; コードKOD-101、Toyobo) を使用した。

使用するベクターは大腸菌と酵母の両方で複製されるYEp型シャトルベクターである pYES2 (pYES2, Cat No:V825-20, Invirtogen Corporation, USA) (R. W. オールド、S. B. プリムローズ 遺伝子操作の原理 原書第5版, 培風館, pp. 234-263, 2000)) を用いた。また、マーカートンパク質GFPをコードするポリヌクレオチド (配列番号6) はベクターpQBI 63 (Cat no. 54-0082, 和光純薬工業 (株)) のGFPの部分を用いた。まず、pYES2の multiple cloning site の中にGFPのオリゴヌクレオチドを挿入したベクター作成した。その後、pYES2のGAL1プロモーターの部分を目的とする酵母遺伝子であるYLR303wのプロモーター配列を含むポリヌクレオチド (配列番号5) で置換して、目的とするプラスミドベクターを得た。GFPおよびプロモーター配列を含むポリヌクレオチドの挿入の操作は、適当な制限酵素を選択して行った。

20 次にこのプラスミドベクターで酵母*Saccharomyces cerevisiae* W303を形質転換した。形質転換の手順を以下に示す。

1) 酵母細胞*Saccharomyces cerevisiae* W303を200mlのSD培地でOD660が0.5になるまで振とう培養する。

2) 集菌して5mlのTE-bufferにけん濁する。

25 3) 2.5Mのリチウムアセテイト250uLを添加する。

4) 300mlずつ分注し10uLの上記プラスミドベクターを添加し、30℃30分培養する。

5) 700mlの50%PEG4000を付加し、30℃60分振とう培養する。

6) ヒートショック (42℃、5分) 後、急冷する。

7) 1Mソルビトールで2回洗浄する。

8) 最小栄養培地で作成した寒天プレートに播種する。

5 組み込みの確認は選択培地 (SD培地 (Yeast nitrogen base without amino acids (Difco 0919-15)+グルコース+アミノ酸 (アデニン、ヒスチジン、トリプトファン)) により行った。選択培地の寒天プレートに生育した酵母のコロニーはさらに、アミノ酸の栄養要求性を確認した。

10 形質転換した酵母細胞をSC-YLR303W-pQBIと命名し、茨城県つくば市東1丁目1番地1 中央第6、独立行政法人産業技術総合研究所特許生物寄託センターに寄託されている (受託日:平成13年7月27日、受託番号:FERM P-18438)。その後、国際寄託へ移管された (受託番号:FERM BP-8157、国際寄託への変更日:平成14年8月19日)。

実施例 7

15 実施例 2 で製造した細胞 SC-YKL071W-pQBI を以下の化合物の 1 つと接触させた。SD培地 (Yeast nitrogen base without amino acids (Difco 0919-15)+グルコース+アミノ酸 (アデニン、ヒスチジン、トリプトファン)) 中で酵母細胞 SC-YKL071W-pQBI を 25℃で培養した。対数増殖期に細胞に対して毒性を有する以下の化学物質の 1 つを添加して更に 2 時間培養した。これと同条件で化学物質を添加せずに培養して対照区とした。

20 (1) ベンゾ (a) ピレン、(2) ビスフェノール A、(3) フタル酸ジ (2-エチルヘキシル)、(4) 2, 5-ジクロロフェノール、(5) 2, 4-ジクロロフェノキシ酢酸、(6) ホルムアルデヒド、(7) 塩化メチル水銀、(8) 4-ニトロキノリン-N-オキサイド、(9) p-ノニルフェノール、(10) ペンタクロロフェノール、(11) 亜ヒ酸ナトリウム、(12) テトラメチルチウラムジスルフィド、(13) トリブチルスズクロライド、(14) 2, 4, 5-トリクロロフェノール、(15) Trp-P-2 (酢酸塩)、(16) パラコート、(17) 塩化カドミウム、(18) γ-ヘキサクロロシクロヘキサン、(19) マラソン、(20) エチレンビスジチオカルバミドサンマンガン、(21) 塩化ニッケル (II)、(22) 重クロム酸カリウム、(23) トリフェニルスズクロライド、(24) フェノール、(25) S-4-クロロベンジル-N,N-ジエチ

ルチオカルバマート、(26) ヘキサクロロフェン、(27) トリクロサン、
(28) 塩化水銀 (I I)、(29) 硫酸銅 (I I)、(30) シアン化カリウム
(31) ジメチルスルホキシド

接触後、酵母細胞を生理食塩水で1回洗浄し、その後5%ホルマリンを含む生理食塩水で固定を行いフローサイトメトリー (EPICS XL: ベックマンコールター) で蛍光を計測した。対照区の蛍光光度分布の範囲を定め、これ以上の蛍光を有する細胞数が1%未満のものを蛍光検出無しとして“-”、1%以上2%未満を“+”、2%を超えるものを蛍光検出有りとして“++”とした。結果を表10に示す。

表10

	化学物質	濃度	蛍光検出
	(1) ベンゾ (a) ピレン	0.2 mM	—
	(2) ビスフェノールA	0.4 mM	—
	(3) フタル酸ジ (2-エチルヘキシル)	83.3 mM	—
15	(4) 2, 5-ジクロロフェノール	0.3 mM	—
	(5) 2, 4-ジクロロフェノキシ酢酸	0.3 mM	—
	(6) ホルムアルデヒド	0.2 mM	—
	(7) 塩化メチル水銀	0.2 μM	—
	(8) 4-ニトロキノリン-N-オキサイド	0.6 μM	—
20	(9) p-ノニルフェノール	10 μM	—
	(10) ペンタクロロフェノール	50 μM	—
	(11) 亜ヒ酸ナトリウム	0.3 mM	—
	(12) テトラメチルチウラムジスルフィド	20 μM	+
	(13) トリブチルスズクロライド	0.4 μM	—
25	(14) 2, 4, 5-トリクロロフェノール	30 mM	—
	(15) Trp-P-2 (酢酸塩)	0.2 mM	—
	(16) パラコート	16.7 mM	—
	(17) 塩化カドミウム	40 μM	—
	(18) γ-ヘキサクロロシクロヘキサン	6.7 mM	—

	(19) マラソン	22.2 mM	—
	(20) エチレンビスジチオカルバミドサンマンガ	0.8 mM	—
	(21) 塩化ニッケル (II)	3.3 mM	—
	(22) 重クロム酸カリウム	0.3 mM	—
5	(23) トリフェニルスズクロライド	10 μ M	—
	(24) フェノール	5.6 mM	—
	(25) S-4-クロロベンジル-N,N- ジエチルチオカルバマート	0.7 mM	—
	(26) ヘキサクロロフェン	30 μ M	—
10	(27) トリクロサン	730 μ M	—
	(28) 塩化水銀 (II)	50 μ M	—
	(29) 硫酸銅 (II)	3.3 mM	—
	(30) シアン化カリウム	16.7 mM	—
	(31) ジメチルスルホキシド	3.7 %	—

15 テトラメチルチウラムジスルフィドの場合にGFPの発現が誘導されることがわかる。

実施例 8

20 実施例 3 で製造した細胞 SC-YCR102C-pQBI を以下の化合物の 1 つと接触させた。SD 培地 (Yeast nitrogen base without amino acids (Difco 0919-15)+グルコース+アミノ酸 (アデニン、ヒスチジン、トリプトファン、メチオニン) 中で SC-YCR102C-pQBI を 25°C で培養した。対数増殖期に細胞に対して毒性を有する以下の化学物質の 1 つを添加して更に 2 時間培養した。これと同条件で化学物質を添加せずに培養して対照区とした。

25 (1) ベンゾ (a) ピレン、(2) ビスフェノール A、(3) フタル酸ジ (2-エチルヘキシル)、(4) 2, 5-ジクロロフェノール、(5) 2, 4-ジクロロフェノキシ酢酸、(6) ホルムアルデヒド、(7) 塩化メチル水銀、(8) 4-ニトロキノリン-N-オキサイド、(9) p-ノニルフェノール、(10) ペンタクロロフェノール、(11) 亜ヒ酸ナトリウム、(12) テトラメチルチウラムジスルフィド、(13) トリブチルスズクロライド、(14) 2, 4, 5-

トリクロロフェノール、(15) Trp-P-2 (酢酸塩)、(16) パラコート、(17) 塩化カドミウム、(18) γ-ヘキサクロロシクロヘキサン、(19) マラソン、(20) エチレンビスジチオカルバミドサンマンガン、(21) 塩化ニッケル (II)、(22) 重クロム酸カリウム、(23) トリフェニルスズクロライド、(24) フェノール、(25) S-4-クロロベンジル-N,N-ジエチルチオカルバマート、(26) ヘキサクロロフェン、(27) トリクロサン、(28) 塩化水銀 (II)、(29) 硫酸銅 (II)、(30) シアン化カリウム (31) ジメチルスルホキシド

- 10 接触後、酵母細胞を生理食塩水で1回洗浄し、その後5%ホルマリンを含む生理食塩水で固定を行いフローサイトメトリー (EPICS XL: ベックマンコールター) で蛍光を計測した。対照区の蛍光光度分布の範囲を定め、これ以上の蛍光を有する細胞数が1%未満のものを蛍光検出無しとして“-”、1%以上2%未満を“+”、2%を超えるものを蛍光検出有りとして“++”とした。結果を表1
- 15 1に示す。

表 1 1

	化学物質	濃 度	蛍光検出
	(1) ベンゾ (a) ピレン	0.2 mM	—
	(2) ビスフェノールA	0.4 mM	—
20	(3) フタル酸ジ (2-エチルヘキシル)	83.3 mM	—
	(4) 2, 5-ジクロロフェノール	0.3 mM	—
	(5) 2, 4-ジクロロフェノキシ酢酸	0.3 mM	—
	(6) ホルムアルデヒド	0.2 mM	—
	(7) 塩化メチル水銀	0.2 μM	—
25	(8) 4-ニトロキノリン-N-オキサイド	0.6 μM	—
	(9) p-ノニルフェノール	10 μM	—
	(10) ペンタクロロフェノール	50 μM	—
	(11) 亜ヒ酸ナトリウム	0.3 mM	—
	(12) テトラメチルチウラムジスルフィド	20 μM	+

	(13)	トリブチルスズクロライド	0.4 μ M	—
	(14)	2, 4, 5-トリクロロフェノール	30 mM	—
	(15)	Trp-P-2 (酢酸塩)	0.2 mM	—
	(16)	パラコート	16.7 mM	—
5	(17)	塩化カドミウム	40 μ M	—
	(18)	γ -ヘキサクロロシクロヘキサン	6.7 mM	—
	(19)	マラソン	22.2 mM	—
	(20)	エチレンビスジチオカルバミドサン	0.8 mM	—
		マンガン		
10	(21)	塩化ニッケル (II)	3.3 mM	—
	(22)	重クロム酸カリウム	0.3 mM	—
	(23)	トリフェニルスズクロライド	10 μ M	—
	(24)	フェノール	5.6 mM	—
	(25)	S-4-クロロベンジル-N,N-ジエチル	0.7 mM	—
15		チオカルバマート		
	(26)	ヘキサクロロフェン	30 μ M	—
	(27)	トリクロサン	730 μ M	—
	(28)	塩化水銀 (II)	50 μ M	—
	(29)	硫酸銅 (II)	3.3 mM	—
20	(30)	シアン化カリウム	16.7 mM	—
	(31)	ジメチルスルホキシド	3.7 %	—

テトラメチルチウラムジスルフィドの場合にGFPの発現が誘導されることがわかる。

実施例 9

- 25 実施例 4 で製造した細胞 SC-YOR382W-pQBI を以下の化合物の 1 つと接触させた。SD 培地 (Yeast nitrogen base without amino acids (Difco 0919-15) + グルコース + アミノ酸 (アデニン、ヒスチジン、トリプトファン、メチオニン) 中で SC-YOR382W-pQBI を 25°C で培養した。対数増殖期に細胞に対して毒性を有する以下の化学物質の 1 つを添加して更に 2 時間培養

した。これと同条件で化学物質を添加せずに培養して対照区とした。

- (1) ベンゾ (a) ピレン、(2) ビスフェノールA、(3) フタル酸ジ (2-エチルヘキシル)、(4) 2, 5-ジクロロフェノール、(5) 2, 4-ジクロロフェノキシ酢酸、(6) ホルムアルデヒド、(7) 塩化メチル水銀、(8) 4-ニトロキノリン-N-オキサイド、(9) p-ノニルフェノール、(10) ペンタクロロフェノール、(11) 亜ヒ酸ナトリウム、(12) テトラメチルチウラムジスルフィド、(13) トリブチルスズクロライド、(14) 2, 4, 5-トリクロロフェノール、(15) T r p-P-2 (酢酸塩)、(16) パラコート、(17) 塩化カドミウム、(18) γ-ヘキサクロロシクロヘキサン、(19) マラソン、(20) エチレンビスジチオカルバミドサンマンガン、(21) 塩化ニッケル (II)、(22) 重クロム酸カリウム、(23) トリフェニルスズクロライド、(24) フェノール、(25) S-4-クロロベンジル-N,N-ジエチルチオカルバマート、(26) ヘキサクロロフェン、(27) トリクロサン、(28) 塩化水銀 (II)、(29) 硫酸銅 (II)、(30) シアン化カリウム (31) ジメチルスルホキシド

接触後、酵母細胞を生理食塩水で1回洗浄し、その後5%ホルマリンを含む生理食塩水で固定を行いフローサイトメトリー (EPICS XL: ベックマンコールター) で蛍光を計測した。対照区の蛍光光度分布の範囲を定め、これ以上の蛍光を有する細胞数が1%未満のものを蛍光検出無しとして“-”、1%以上2%未満を“+”、2%を超えるものを蛍光検出有りとして“++”とした。結果を表12に示す。

表 1 2

	化学物質	濃度	蛍光検出
25	(1) ベンゾ (a) ピレン	0.2 mM	-
	(2) ビスフェノールA	0.4 mM	-
	(3) フタル酸ジ (2-エチルヘキシル)	83.3 mM	-
	(4) 2, 5-ジクロロフェノール	0.3 mM	++
	(5) 2, 4-ジクロロフェノキシ酢酸	0.3 mM	-

	(6) ホルムアルデヒド	0.2 mM	—
	(7) 塩化メチル水銀	0.2 μ M	—
	(8) 4-ニトロキノリン-N-オキサイド	0.6 μ M	++
	(9) p-ノニルフェノール	10 μ M	++
5	(10) ペンタクロロフェノール	50 μ M	—
	(11) 亜ヒ酸ナトリウム	0.3 mM	—
	(12) テトラメチルチウラムジスルフィド	20 μ M	—
	(13) トリブチルスズクロライド	0.4 μ M	—
	(14) 2, 4, 5-トリクロロフェノール	30 mM	++
10	(15) Trp-P-2 (酢酸塩)	0.2 mM	++
	(16) パラコート	16.7 mM	—
	(17) 塩化カドミウム	40 μ M	—
	(18) γ -ヘキサクロロシクロヘキサン	6.7 mM	—
	(19) マラソン	22.2 mM	++
15	(20) エチレンビスジチオカルバミドサン マンガン	0.8 mM	++
	(21) 塩化ニッケル (II)	3.3 mM	++
	(22) 重クロム酸カリウム	0.3 mM	++
	(23) トリフェニルスズクロライド	10 μ M	—
20	(24) フェノール	5.6 mM	++
	(25) S-4-クロロベンジル-N,N-ジエチル チオカルバマート	0.7 mM	—
	(26) ヘキサクロロフェン	30 μ M	—
	(27) トリクロサン	730 μ M	—
25	(28) 塩化水銀 (II)	50 μ M	—
	(29) 硫酸銅 (II)	3.3 mM	—
	(30) シアン化カリウム	16.7 mM	—
	(31) ジメチルスルホキシド	3.7 %	++

2, 4-ジクロロフェノキシ酢酸、4-ニトロキノリン-N-オキサイド、p-
 ノニルフェノール、2, 4, 5-トリクロロフェノール、Trp-P-2 (酢
 酸塩)、マラソン、エチレンビスジチオカルバミドサンマンガン、塩化ニッケル
 (I I)、重クロム酸カリウム、フェノール、ジメチルスルホキシドの場合にG
 5 F Pの発現が誘導されることがわかる。

実施例 10

実施例 5 で製造した細胞 SC-YLL057C-pQBI を以下の化合物の 1
 つと接触させた。SD 培地 (Yeast nitrogen base without amino acids (Difco
 0919-15) + グルコース + アミノ酸 (アデニン、ヒスチジン、トリプトファン) 中
 10 で酵母細胞 SC-YLL057C-pQBI を 25℃ で培養した。対数増殖期に
 細胞に対して毒性を有する以下の化学物質の 1 つを添加して更に 2 時間培養した。
 これと同条件で化学物質を添加せずに培養して対照区とした。

(1) ベンゾ (a) ピレン、(2) ビスフェノール A、(3) フタル酸ジ (2-
 エチルヘキシル)、(4) 2, 5-ジクロロフェノール、(5) 2, 4-ジクロ
 15 ロフェノキシ酢酸、(6) ホルムアルデヒド、(7) 塩化メチル水銀、(8) 4-
 ニトロキノリン-N-オキサイド、(9) p-ノニルフェノール、(10) ペ
 ンタクロロフェノール、(11) 亜ヒ酸ナトリウム、(12) テトラメチルチウ
 ラムジスルフィド、(13) トリブチルスズクロライド、(14) 2, 4, 5-
 トリクロロフェノール、(15) Trp-P-2 (酢酸塩)、(16) パラコー
 20 ト、(17) 塩化カドミウム、(18) γ-ヘキサクロロシクロヘキサン、(1
 9) マラソン、(20) エチレンビスジチオカルバミドサンマンガン、(21)
 塩化ニッケル (I I)、(22) 重クロム酸カリウム、(23) トリフェニルス
 ズクロライド、(24) フェノール、(25) S-4-クロロベンジル-N,N-ジエチ
 ルチオカルバマート、(26) ヘキサクロロフェン、(27) トリクロサン、
 25 (28) 塩化水銀 (I I)、(29) 硫酸銅 (I I)、(30) シアン化カリウ
 ム (31) ジメチルスルホキシド

接触後、酵母細胞を生理食塩水で 1 回洗浄し、その後 5% ホルマリンを含む生
 理食塩水で固定を行いフローサイトメトリー (EPICS XL: ベックマンコールタ
 ー) で蛍光を計測した。対照区の蛍光光度分布の範囲を定め、これ以上の蛍光を

有する細胞数が1%未満のものを蛍光検出無しとして“-”、1%以上2%未満を“+”、2%を超えるものを蛍光検出有りとして“++”とした。結果を表13に示す。

表 1 3

5	化学物質	濃度	蛍光検出
	(1) ベンゾ (a) ピレン	0.2 mM	—
	(2) ビスフェノールA	0.4 mM	—
	(3) フタル酸ジ (2-エチルヘキシル)	83.3 mM	—
	(4) 2, 5-ジクロロフェノール	0.3 mM	—
10	(5) 2, 4-ジクロロフェノキシ酢酸	0.3 mM	++
	(6) ホルムアルデヒド	0.2 mM	—
	(7) 塩化メチル水銀	0.2 μ M	—
	(8) 4-ニトロキノリン-N-オキサイド	0.6 μ M	—
	(9) p-ノニルフェノール	10 μ M	—
15	(10) ペンタクロロフェノール	50 μ M	—
	(11) 亜ヒ酸ナトリウム	0.3 mM	++
	(12) テトラメチルチウラムジスルフィド	20 μ M	—
	(13) トリブチルスズクロライド	0.4 μ M	—
	(14) 2, 4, 5-トリクロロフェノール	30 mM	—
20	(15) Trp-P-2 (酢酸塩)	0.2 mM	—
	(16) パラコート	16.7 mM	—
	(17) 塩化カドミウム	40 μ M	++
	(18) γ -ヘキサクロロシクロヘキサン	6.7 mM	—
	(19) マラソン	22.2 mM	—
25	(20) エチレンビスジチオカルバミドサン	0.8 mM	—
	マンガン		
	(21) 塩化ニッケル (II)	3.3 mM	—
	(22) 重クロム酸カリウム	0.3 mM	—
	(23) トリフェニルスズクロライド	10 μ M	—

	(24) フェノール	5.6 mM	—
	(25) S-4-クロロベンジル-N,N-	0.7 mM	—
	ジエチルチオカルバマート		
	(26) ヘキサクロロフェン	30 μ M	—
5	(27) トリクロサン	730 μ M	—
	(28) 塩化水銀 (I I)	50 μ M	—
	(29) 硫酸銅 (I I)	3.3 mM	—
	(30) シアン化カリウム	16.7 mM	++
	(31) ジメチルスルホキシド	3.7 %	—

10

2, 4-ジクロロフェノキシ酢酸、亜ヒ酸ナトリウム、塩化カドミウム、シアン化カリウムの場合にGFPの発現が誘導されることがわかる。

実施例 11

15 実施例 6 で製造した細胞 SC-YCR303W-pQBI を以下の化合物の 1 つと接触させた。SD 培地 (Yeast nitrogen base without amino acids (Difco 0919-15) + グルコース + アミノ酸 (アデニン、ヒスチジン、トリプトファン、メチオニン) 中で SC-YLR303W-pQBI を 25℃ で培養した。対数増殖期に細胞に対して毒性を有する以下の化学物質の 1 つを添加して更に 2 時間培養

20 した。これと同条件で化学物質を添加せずに培養して対照区とした。

(1) ベンゾ (a) ピレン、(2) ビスフェノール A、(3) フタル酸ジ (2-エチルヘキシル)、(4) 2, 5-ジクロロフェノール、(5) 2, 4-ジクロロフェノキシ酢酸、(6) ホルムアルデヒド、(7) 塩化メチル水銀、(8) 4-ニトロキノリン-N-オキサイド、(9) p-ノニルフェノール、(10) ペンタクロロフェノール、(11) 亜ヒ酸ナトリウム、(12) テトラメチルチウラムジスルフィド、(13) トリブチルスズクロライド、(14) 2, 4, 5-トリクロロフェノール、(15) Trp-P-2 (酢酸塩)、(16) パラコート、(17) 塩化カドミウム、(18) γ -ヘキサクロロシクロヘキサン、(19) マラソン、(20) エチレンビスジチオカルバミドサンマンガン、(21)

25

塩化ニッケル (I I)、(22) 重クロム酸カリウム、(23) トリフェニルス
 ズクロライド、(24) フェノール、(25) S-4-クロロベンジル-N,N-ジエチ
 ルチオカルバマート、(26) ヘキサクロロフェン、(27) トリクロサン、
 (28) 塩化水銀 (I I)、(29) 硫酸銅 (I I)、(30) シアン化カリウ
 ム (31) ジメチルスルホキシド

接触後、酵母細胞を生理食塩水で1回洗浄し、その後5%ホルマリンを含む生
 理食塩水で固定を行いフローサイトメトリー (EPICS XL: ベックマンコールタ
 ー) で蛍光を計測した。対照区の蛍光光度分布の範囲を定め、これ以上の蛍光を
 有する細胞数が1%未満のものを蛍光検出無しとして“-”、1%以上2%未満
 を“+”、2%を超えるものを蛍光検出有りとして“++”とした。結果を表1
 4に示す。

表 1.4

	化学物質	濃度	蛍光測定
15	(1) ベンゾ (a) ピレン	0.2 mM	++
	(2) ビスフェノールA	0.4 mM	-
	(3) フタル酸ジ (2-エチルヘキシル)	83.3 mM	-
	(4) 2, 5-ジクロロフェノール	0.3 mM	-
	(5) 2, 4-ジクロロフェノキシ酢酸	0.3 mM	++
20	(6) ホルムアルデヒド	0.2 mM	++
	(7) 塩化メチル水銀	0.2 μ M	-
	(8) 4-ニトロキノリン-N-オキサイド	0.6 μ M	-
	(9) p-ノニルフェノール	10 μ M	-
	(10) ペンタクロロフェノール	50 μ M	-
25	(11) 亜ヒ酸ナトリウム	0.3 mM	++
	(12) テトラメチルチウラムジスルフィド	20 μ M	-
	(13) トリブチルスズ=クロライド	0.4 μ M	-
	(14) 2, 4, 5-トリクロロフェノール	30 mM	-
	(15) T r p - P - 2 (酢酸塩)	0.2 mM	-

	(16) パラコート	16.7 mM	—
	(17) 塩化カドミウム	40 μ M	++
	(18) γ -ヘキサクロロシクロヘキサン	6.7 mM	—
	(19) マラソン	22.2 mM	—
5	(20) エチレンビスジチオカルバミドサン マンガン	0.8 mM	+
	(21) 塩化ニッケル (II)	3.3 mM	—
	(22) 重クロム酸カリウム	0.3 mM	—
	(23) トリフェニルスズ=クロライド	10 μ M	—
10	(24) フェノール	5.6 mM	—
	(25) S-4-クロロベンジル-N,N- ジエチルチオカルバマート	0.7 mM	—
	(26) ヘキサクロロフェン	30 μ M	—
	(27) トリクロサン	730 μ M	—
15	(28) 塩化水銀 (II)	50 μ M	++
	(29) 硫酸銅 (II)	3.3 mM	—
	(30) シアン化カリウム	16.7 mM	++
	(31) ジメチルスルホキシド	3.7 %	—

20 ベンゾ (a) ピレン、2, 4-ジクロロフェノキシ酢酸、ホルムアルデヒド、
亜ヒ酸ナトリウム、塩化カドミウム、エチレンビスジチオカルバミドサンマンガン、
塩化水銀 (II)、シアン化カリウムの場合に GFP の発現が誘導されることがわかる。

請 求 の 範 囲

1. YBR072W、YCR102C、YCR107W、YDL218W、YDL243C、YDR453C、YDR533C、
 YFL014W、YFL056C、YFL057C、YGR110W、YJR155W、YKL071W、YKR076W、YLL060C、
 YLR460C、YMR090W、YNL331C、YNL332W、YNL335W、YOL150C、YOL165C、YPL171C、
 5 YPR167C、YBL048W、YBL064C、YBL107C、YBR008C、YBR173C、YBR256C、YBR296C、
 YDL021W、YFL022C、YFL024C、YFL061W、YGL121C、YGL158W、YGR043C、YHR029C、
 YHR112C、YHR139C、YHR179W、YHR209W、YIR030C、YJR010W、YJR048W、YKL001C、
 YKL107W、YKR075C、YKR097W、YLL056C、YLR297W、YLR303W、YML087C、YMR096W、
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 YPL040C、YPL099C、YPL107W、YPL134C、YPL138C、及びYPL140Cよりなる群から選
 択される酵母遺伝子のプロモーターを含むポリヌクレオチド配列、並びにこれら
 遺伝子に相同性の他種由来の遺伝子のプロモーターを含むポリヌクレオチド配列
 よりなる群から選択されるポリヌクレオチド配列に、マーカータンパク質をコー

ドするポリヌクレオチドを作動可能に連結したポリヌクレオチド。

2. 酵母遺伝子が、機能未知の酵母遺伝子である請求の範囲第1項記載のポリヌクレオチド。

5 3. 酵母遺伝子が、ミトコンドリアタンパク質遺伝子である請求の範囲第1項記載のポリヌクレオチド。

4. 酵母遺伝子が、遺伝子修復系タンパク質遺伝子である請求の範囲第1項記載のポリヌクレオチド。

5. 酵母遺伝子が、エネルギー系タンパク質遺伝子である請求の範囲第1項記載のポリヌクレオチド。

10 6. 酵母遺伝子が、トランスポート促進タンパク質遺伝子である請求の範囲第1項記載のポリヌクレオチド。

7. 酵母遺伝子が、ストレスタンパク質遺伝子である請求の範囲第1項記載のポリヌクレオチド。

15 8. 酵母遺伝子が、代謝系タンパク質遺伝子である請求の範囲第1項記載のポリヌクレオチド。

9. 酵母遺伝子が、脱毒性タンパク質遺伝子である請求の範囲第1項記載のポリヌクレオチド。

10. 機能未知の酵母遺伝子がYKL071Wである請求の範囲第2項記載のポリヌクレオチド。

20 11. 機能未知の酵母遺伝子がYCR102Cである請求の範囲第2項記載のポリヌクレオチド。

12. 機能未知の酵母遺伝子がYOR382Wである請求の範囲第2項記載のポリヌクレオチド。

25 13. 代謝系タンパク質遺伝子がYLR303Wである請求の範囲第8項記載のポリヌクレオチド。

14. 脱毒性タンパク質遺伝子がYLL057Cである請求の範囲第9項記載のポリヌクレオチド。

15. 請求の範囲第1～14項のいずれかに記載のポリヌクレオチドを含むベクター。

16. 請求の範囲第1～14項のいずれかに記載のポリヌクレオチド又は請求項15に記載のベクターで形質転換した細胞。

17. (1) 被験物質を、請求の範囲第16項に記載の細胞と接触させ、

(2) マーカートンパク質をコードするmRNAの発現を検出すること、

5 を含む被験物質中の毒性化合物の検出方法。

18. mRNAの発現をマーカートンパク質の発現によって確認する請求の範囲第17項に記載の方法。

19. mRNAの発現をノーザンブロット法により検出する請求の範囲第17項に記載の方法。

10 20. mRNAの発現を検出するため逆転写PCR法(RT-PCR)によって増幅させる請求項17項に記載の方法。

21. 2つ以上の請求の範囲第16項に記載の細胞を用いて、それぞれの細胞について請求の範囲第17～20項のいずれかに記載の方法を行なうことを含む毒性化合物の同定方法。

15 22. 酵母遺伝子がYLL057C、YLR303W、YKL071W、YCR102C及びYOR382Wから選ばれた2つ以上のものである請求の範囲第16項に記載の細胞を用いる請求の範囲第請求項21項に記載の方法。

SEQUENCE LISTING

<110> National Institute of Advanced Industrial Science and Technology

<110> DAIKIN INDUSTRIES, LTD.

<120> Method for Detecting Toxic Substance

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3/9

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 tagctttatc tatatagtct actgtgcagc ttaaaatacc caactcatgc gtctcattgg 660
 acgagctctt ggcccttgga aaggtgctat attagtatat aggggaatga tgacaaaagc 720
 ctcaatgtgg cttgagtcga tttcttattt ggcgccacag ggcacatgga gtttatttat 780
 catactacta acataaagaa ggtatgtagg caatacaaca agaatgctgg aaaagttaag 840
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<212> DNA

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 ttgttgggat tccattttta ataaggcaat aatattaggt atgtagaata tactagaagt 180
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 gcgtcagatt taggtggatt taacctctaa aatctctgat atcttcggat gcaagggttc 600
 gaatccctta gctctcatta ttttttgctt tttctcttga ggtcacatga tcgcaaaatg 660
 gcaaatggca cgtgaagctg tcgatattgg ggaactgtgg tggttgcaa atgactaatt 720
 aagttagtca aggcgccatc ctcatgaaaa ctgtgtaaca taataaccga agtgtcgaaa 780

6/9

aggtggcacc ttgtccaatt gaacacgctc gatgaaaaaa ataagatata tataaggtta 840
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 gaagatggtc ctttcctgta cataaccttc gggcatggca ctcttgaaaa agtcatgccg 480
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 tgttggccat ggaacaggca gtttgccagt agtgcagatg aacttcaggg taagttttcc 600
 gtatgttgca tcaccttcac cctctccact gacagagaac ttgtggcgt taacatcacc 660
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<210> 9

<211> 23

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 9

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<210> 10

<211> 22

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 10

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<210> 11

<211> 23

<212> DNA

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<210> 12

<211> 22

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 12

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<210> 13

<211> 23

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 13

gctaacgaac aggatggat tga

<210> 14

<211> 22

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 14

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<210> 15

<211> 23

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 15

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<210> 16

<211> 22

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 16

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PCT

原本（出願用） - 印刷日時 2002年08月22日（22. 08. 2002）木曜日 13時06分35秒

0-1	様式-PCT/RO/134 (EASY) この寄託された微生物又はその他の生物材料に関する表示 (PCT規則13の2)は、 右記によって作成された。	PCT-EASY Version 2.92 (updated 01.06.2002)
0-1-1		
0-2	国際出願番号.	PCT/JP02/08495
0-3	出願人又は代理人の書類記号	663336
1	下記の表示は発明の詳細な説明中に記載された微生物又は生物材料に関連している。 記載頁 行	101 15-17
1-1		
1-2		
1-3	寄託の表示	
1-3-1	寄託機関の名称	独立行政法人 産業技術総合研究所 特許生物寄託センター (IPOD)
1-3-2	寄託機関のあて名	〒305-8566 日本国茨城県つくば市東1丁目1番地 1 中央第6
1-3-3	寄託の日付	2002年08月19日 (19.08.2002)
1-3-4	受託番号	IPOD FERM BP-8161
1-4	追加の表示	本願が特許されるまで、あるいは、本願が拒絶され、 取り下げられ、または取り下げられたとみなされ た場合には出願日から20年までは、本願明細書に開 示した寄託微生物のサンプルは、分譲申請者が指定 した専門家にのみ分譲されることを要求する。
1-5	この表示を行うための指定国	EP: (AT BE BG CH&LI CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR)
1-6	追加事項の表示の届け出 右記の表示は後に国際事務局に 届け出る予定である。	なし (NONE)
2	下記の表示は発明の詳細な説明中に記載された微生物又は生物材料に関連している。 記載頁 行	102 27-29
2-1		
2-2		
2-3	寄託の表示	
2-3-1	寄託機関の名称	独立行政法人 産業技術総合研究所 特許生物寄託センター (IPOD)
2-3-2	寄託機関のあて名	〒305-8566 日本国茨城県つくば市東1丁目1番地 1 中央第6
2-3-3	寄託の日付	2002年08月19日 (19.08.2002)
2-3-4	受託番号	IPOD FERM BP-8159
2-4	追加の表示	本願が特許されるまで、あるいは、本願が拒絶され、 取り下げられ、または取り下げられたとみなされ た場合には出願日から20年までは、本願明細書に開 示した寄託微生物のサンプルは、分譲申請者が指定 した専門家にのみ分譲されることを要求する。
2-5	この表示を行うための指定国	EP: (AT BE BG CH&LI CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR)
2-6	追加事項の表示の届け出 右記の表示は後に国際事務局に 届け出る予定である。	なし (NONE)

PCT

原本（出願用） - 印刷日時 2002年08月22日（22. 08. 2002）木曜日 13時06分35秒

3	下記の表示は発明の詳細な説明中に記載された微生物又は生物材料に関連している。	
3-1	記載頁	104
3-2	行	10-12
3-3	寄託の表示	
3-3-1	寄託機関の名称	独立行政法人 産業技術総合研究所 特許生物寄託センター (IPOD)
3-3-2	寄託機関のあて名	〒305-8566 日本国茨城県つくば市東1丁目1番地 1 中央第6
3-3-3	寄託の日付	2002年08月19日 (19. 08. 2002)
3-3-4	受託番号	IPOD FERM BP-8160
3-4	追加の表示	本願が特許されるまで、あるいは、本願が拒絶され、取り下げられ、または取り下げられたとみなされた場合には出願日から20年までは、本願明細書に開示した寄託微生物のサンプルは、分譲申請者が指定した専門家にのみ分譲されることを要求する。
3-5	この表示を行うための指定国	EP: (AT BE BG CH&LI CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR)
3-6	追加事項の表示の届け出 右記の表示は後に国際事務局に届け出る予定である。	なし (NONE)
4	下記の表示は発明の詳細な説明中に記載された微生物又は生物材料に関連している。	
4-1	記載頁	105
4-2	行	22-26
4-3	寄託の表示	
4-3-1	寄託機関の名称	独立行政法人 産業技術総合研究所 特許生物寄託センター (IPOD)
4-3-2	寄託機関のあて名	〒305-8566 日本国茨城県つくば市東1丁目1番地 1 中央第6
4-3-3	寄託の日付	2001年07月27日 (27. 07. 2001)
4-3-4	受託番号	IPOD FERM BP-8158
4-4	追加の表示	本願が特許されるまで、あるいは、本願が拒絶され、取り下げられ、または取り下げられたとみなされた場合には出願日から20年までは、本願明細書に開示した寄託微生物のサンプルは、分譲申請者が指定した専門家にのみ分譲されることを要求する。
4-5	この表示を行うための指定国	EP: (AT BE BG CH&LI CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR)
4-6	追加事項の表示の届け出 右記の表示は後に国際事務局に届け出る予定である。	なし (NONE)
5	下記の表示は発明の詳細な説明中に記載された微生物又は生物材料に関連している。	
5-1	記載頁	107
5-2	行	7-11

PCT

原本（出願用） - 印刷日時 2002年08月22日（22. 08. 2002）木曜日 13時06分35秒

5-3	寄託の表示	
5-3-1	寄託機関の名称	独立行政法人 産業技術総合研究所 特許生物寄託センター (IPOD)
5-3-2	寄託機関のあて名	〒305-8566 日本国茨城県つくば市東1丁目1番地 1 中央第6
5-3-3	寄託の日付	2001年07月27日 (27. 07. 2001)
5-3-4	受託番号	IPOD FERM BP-8157
5-4	追加の表示	本願が特許されるまで、あるいは、本願が拒絶され、 取り下げられ、または取り下げられたとみなされ た場合には出願日から20年までは、本願明細書に開 示した寄託微生物のサンプルは、分譲申請者が指定 した専門家にのみ分譲されることを要求する。
5-5	この表示を行うための指定国	EP: (AT BE BG CH&LI CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR)
5-6	追加事項の表示の届け出 右記の表示は後に国際事務局に 届け出る予定である。	なし (NONE)

受理官庁記入欄

0-4	この用紙は国際出願とともに 受理した (はい/いいえ)	23.08.02
0-4-1	権限のある職員	山田 雄一

国際事務局記入欄

0-5	この用紙が国際事務局に受理 された日	13 September 2002
0-5-1	権限のある職員	関 雄一郎

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP02/08495

A. CLASSIFICATION OF SUBJECT MATTER Int.Cl ⁷ C12N15/00, C12Q1/68		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) Int.Cl ⁷ C12N15/00, C12Q1/68		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CAPLUS/MEDLINE/BIOSIS/WPIDS (STN)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E, X	JP 2001-286281 A (Director General of National Institute of Advanced Industrial Science and Technology), 16 October, 2001 (16.10.01), Full text (Family: none)	1-9, 15-21
X Y	Prein, B. et al., "A novel strategy for constructing N-terminal chromosomal fusions to green fluorescent protein in the yeast <i>Saccharomyces cerevisiae</i> ", FEBS Letters, 2000, Vol.485, No.1, pages 29 to 34, abstract, Materials and Methods	1-9, 15 16-21
X Y	WO 00/58520 A1 (Rosetta Inpharmatics Inc.), 05 October, 2000 (05.10.00), Claims; pages 100 to 102; table 1 & AU 2000039313 A	1-9, 15 16-21
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* "A" "E" "L" "O" "P"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance earlier document but published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	
	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family	
Date of the actual completion of the international search 26 November, 2002 (26.11.02)	Date of mailing of the international search report 10 December, 2002 (10.12.02)	
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer	
Facsimile No.	Telephone No.	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP02/08495

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	Casalone, E. et al., "Disruption and phenotypic analysis of six novel genes from chromosome IV of <i>Saccharomyces cerevisiae</i> reveal YDL060w as an essential gene for vegetative growth", <i>Yeast</i> , 1999, Vol.15, No.15, pages 1691 to 1701, abstract; table 1	<u>1-9,15</u> 16-21
X Y	Belli, G. et al., "Functional analysis of yeast essential genes using a promoter-substitution cassette and the tetracycline-regulatable dual expression system", <i>Yeast</i> , 1998, Vol.14, No.12, pages 1127 to 1138, abstract; table 3	<u>1-9,15</u> 16-21
X Y	Huang, M.E., "Disruption of six novel yeast genes reveals three genes essential for vegetative growth and one required for growth at low temperature", <i>Yeast</i> , 1997, Vol.13, No.12, pages 1181 to 1194, abstract; table 2	<u>1-9,15</u> 16-21
X Y	Sartori, G. et al., "Inactivation of six genes from chromosomes VII and XIV of <i>Saccharomyces cerevisiae</i> and basic phenotypic analysis of the mutant strains", <i>Yeast</i> , 2000, Vol.16, No.3, pages 255 to 265, abstract; table 1	<u>1-9,15</u> 16-21
Y	FUJITA, K. et al., "Hsp104 expression and morphological changes associated with disinfectants in <i>Saccharomyces cerevisiae</i> : Environmental bioassay using stress response", <i>Water Science and Technology</i> , 1998, Vol.38, No.7, pages 237 to 243, abstract	1-9,15-21
Y	MIURA, S. et al., "Screening of genes involved in isooctane tolerance in <i>Saccharomyces cerevisiae</i> by using mRNA differential display", <i>Applied and Environmental Microbiology</i> , 2000, Vol.66, No.11, pages 4883 to 4889, abstract	1-9,15-21
Y	Parry, J.M., "The use of yeast cultures for the detection of environmental mutagens using a fluctuation test", <i>Mutation Research</i> , 1977, Vol.46, No.3, pages 165 to 175, abstract	1-9,15-21
Y	Alberts, B. et al., "Essential Cell Biology", New York: Garland Publishing, Inc., 1998, page 323, Fig. 10-9	1-9,15-21
Y	Lashkari, D.A. et al., "Yeast microarrays for genome wide parallel genetic and gene expression analysis", <i>Proc.Natl.Acad.Sci.USA</i> , 1997, Vol.94, pages 13057 to 13062, abstract; table 1	1-9,15-21

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP02/08495

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
(See extra sheet.)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: Parts of claims 1 to 9 and 15 to 21.

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP02/08495

Continuation of Box No.II of continuation of first sheet(1)

Requirement of unity of invention in international application (PCT Rule 13.1) is not fulfilled unless there is a technical relationship in a group of claimed inventions involving one or more of the same or corresponding special technical features. The expression "special technical feature" means a technical feature that defines a contribution which each of the claimed inventions, considered as a whole, makes over the prior art (PCT Rule 13.2). The determination of unity of invention is made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claims (PCT Rule 13.3).

Concerning the claims in the present case, a large number of polynucleotides, among those wherein a polynucleotide encoding a marker protein is ligated in an operable manner to a polynucleotide sequence containing the promoter of any of the 2053 publicly known yeast genes as set forth in claim 1, had been constructed by cloning these genes and thus publicly known, or have been publicly known as replacement cassettes to be used in short-flanking homology (SFH) gene replacement techniques (see, for example, Casalone, E., et al.; "Disruption and phenotypic analysis of six novel genes from chromosome IV of *Saccharomyces cerevisiae* reveal YDL060w as an essential gene for vegetative growth" YEAST, Vol. 15, No. 15, 1999, Nov., pp. 1691-1701) (in the above document, for example, the promoters of YDL065C and YDL110C are ligated to kanMX4 marker).

Thus, it can be said that there is no "special technical feature" common to the inventions relating to the respective polynucleotides with the use of the promoters of the above-described genes presented in the claims.

Such being the case, the claims involve 2053 inventions, which are different from each other, corresponding respectively to the promoters with the use of the 2053 genes.

A. 発明の属する分野の分類 (国際特許分類 (IPC))
Int. Cl⁷ C12N15/00, C12Q1/68

B. 調査を行った分野

調査を行った最小限資料 (国際特許分類 (IPC))
Int. Cl⁷ C12N15/00, C12Q1/68

最小限資料以外の資料で調査を行った分野に含まれるもの

国際調査で使用した電子データベース (データベースの名称、調査に使用した用語)

CAPLUS/MEDLINE/BIOSIS/WPIDS (STN)

C. 関連すると認められる文献

引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する 請求の範囲の番号
EX	JP 2001-286281 A (経済産業省産業技術総合研究所長), 2001.10.16 (ファミリーなし) 全文参照	1-9, 15-21
$\frac{X}{Y}$	Prein, B., et al., "A novel strategy for constructing N-terminal chromosomal fusions to green fluorescent protein in the yeast <i>Saccharomyces cerevisiae</i> " FEBS Letters, 2000, Vol. 485, No. 1, pp. 29-34, 要約及び Materials and Methods 参照	$\frac{1-9, 15}{16-21}$
$\frac{X}{Y}$	WO 00/58520 A1 (ROSETTA INPHARMATICS INC.), 2000.10.05, 請求の範囲, pp. 100-102 の Table 1 参照 & AU 2000039313 A	$\frac{1-9, 15}{16-21}$

☒ C欄の続きにも文献が列挙されている。

☐ パテントファミリーに関する別紙を参照。

* 引用文献のカテゴリー

「A」 特に関連のある文献ではなく、一般的技術水準を示すもの
「E」 国際出願日前の出願または特許であるが、国際出願日以後に公表されたもの
「L」 優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献 (理由を付す)
「O」 口頭による開示、使用、展示等に言及する文献
「P」 国際出願日前で、かつ優先権の主張の基礎となる出願

の日の後に公表された文献
「T」 国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの
「X」 特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの
「Y」 特に関連のある文献であって、当該文献と他の1以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの
「&」 同一パテントファミリー文献

国際調査を完了した日

26.11.02

国際調査報告の発送日

10.12.02

国際調査機関の名称及びあて先

日本国特許庁 (ISA/JP)
郵便番号 100-8915

東京都千代田区霞が関三丁目4番3号

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C (続き) . 関連すると認められる文献		
引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する 請求の範囲の番号
<u>X</u> Y	Casalone, E., et al., "Disruption and phenotypic analysis of six novel genes from chromosome IV of <i>Saccharomyces cerevisiae</i> reveal YDL060w as an essential gene for vegetative growth" <i>Yeast</i> , 1999, Vol.15, No.15, pp.1691-1701, 要約及びTable 1参照	<u>1-9, 15</u> 16-21
<u>X</u> Y	Belli, G., et al., "Functional analysis of yeast essential genes using a promoter-substitution cassette and the tetracycline-regulatable dual expression system" <i>Yeast</i> , 1998, Vol.14, No.12, pp.1127-1138, 要約及びTable 3参照	<u>1-9, 15</u> 16-21
<u>X</u> Y	Huang, M.E., "Disruption of six novel yeast genes reveals three genes essential for vegetative growth and one required for growth at low temperature" <i>Yeast</i> , 1997, Vol.13, No.12, pp.1181-1194, 要約及びTable 2参照	<u>1-9, 15</u> 16-21
<u>X</u> Y	Sartori, G., et al., "Inactivation of six genes from chromosomes VII and XIV of <i>Saccharomyces cerevisiae</i> and basic phenotypic analysis of the mutant strains" <i>Yeast</i> , 2000, Vol.16, No.3, pp.255-265, 要約及びTable 1参照	<u>1-9, 15</u> 16-21
Y	Fujita, K., et al., "Hsp104 expression and morphological changes associated with disinfectants in <i>Saccharomyces cerevisiae</i> : Environmental bioassay using stress response" <i>Water Science and Technology</i> , 1998, Vol. 38, No.7, pp. 237-243, 要約参照	1-9, 15-21
Y	Miura, S., et al., "Screening of genes involved in isooctane tolerance in <i>Saccharomyces cerevisiae</i> by using mRNA differential display" <i>Applied and Environmental Microbiology</i> , 2000, Vol.66, No.11, pp.4883-4889, 要約参照	1-9, 15-21
Y	Parry, J.M., "The use of yeast cultures for the detection of environmental mutagens using a fluctuation test" <i>Mutation Research</i> , 1977, Vol.46, No.3, pp.165-175, 要約参照	1-9, 15-21
Y	Alberts, B., et al., "Essential Cell Biology" New York: Garland Publishing, Inc., 1998, p.323, Fig.10-9参照	1-9, 15-21
Y	Lashkari, D.A., et al., "Yeast microarrays for genome wide parallel genetic and gene expression analysis" <i>Proc. Natl. Acad. Sci. USA</i> , 1997, Vol. 94, pp.13057-13062, 要約及びTable 1参照	1-9, 15-21

第Ⅰ欄 請求の範囲の一部の調査ができないときの意見（第1ページの2の続き）

法第8条第3項（PCT17条(2)(a)）の規定により、この国際調査報告は次の理由により請求の範囲の一部について作成しなかった。

1. ☐ 請求の範囲 _____ は、この国際調査機関が調査をすることを要しない対象に係るものである。つまり、
2. ☐ 請求の範囲 _____ は、有意義な国際調査をすることができる程度まで所定の要件を満たしていない国際出願の部分に係るものである。つまり、
3. ☐ 請求の範囲 _____ は、従属請求の範囲であってPCT規則6.4(a)の第2文及び第3文の規定に従って記載されていない。

第Ⅱ欄 発明の単一性が欠如しているときの意見（第1ページの3の続き）

次に述べるようにこの国際出願に二以上の発明があるとこの国際調査機関は認めた。

（別紙参照）

1. ☐ 出願人が必要な追加調査手数料をすべて期間内に納付したので、この国際調査報告は、すべての調査可能な請求の範囲について作成した。
2. ☐ 追加調査手数料を要求するまでもなく、すべての調査可能な請求の範囲について調査することができたので、追加調査手数料の納付を求めなかった。
3. ☐ 出願人が必要な追加調査手数料を一部のみしか期間内に納付しなかったため、この国際調査報告は、手数料の納付のあった次の請求の範囲のみについて作成した。
4. ☒ 出願人が必要な追加調査手数料を期間内に納付しなかったため、この国際調査報告は、請求の範囲の最初に記載されている発明に係る次の請求の範囲について作成した。

請求の範囲1～9, 15～21の一部

追加調査手数料の異議の申立てに関する注意

- ☐ 追加調査手数料の納付と共に出願人から異議申立てがあった。
- ☐ 追加調査手数料の納付と共に出願人から異議申立てがなかった。

(第Ⅱ欄の別紙)

国際出願における発明の単一性の要件（PCT規則13.1）は、請求の範囲に記載された一群の発明の間に一又は二以上の同一または対応する特別な技術的特徴を含む技術的關係があるときに限り、満たされるものであって、この「特別な技術的特徴」とは、請求の範囲に記載された各発明が全体として先行技術に対して行う貢献を明示する技術的特徴のことである（PCT規則13.2）。また、発明の単一性の要件の判断は、一群の発明が別個の請求の範囲に記載されているか単一の請求の範囲に択一的な形式によって記載されているかを考慮することなく行われる（PCT規則13.3）。

ここで、請求の範囲をみると、請求の範囲1に記載された2053個の公知の酵母遺伝子のプロモーターを含むポリヌクレオチド配列に、マーカータンパク質をコードするポリヌクレオチドを作動可能に連結したポリヌクレオチドのうち多数のものが、当該遺伝子のクローニング操作で既に作成されて公知であったか、あるいは

short-flanking homology (SFH) gene replacement 技術に用いるreplacement cassettes

（例えば文献 Casalone, E., et al; "Disruption and phenotypic analysis of six novel genes from chromosome IV of *Saccharomyces cerevisiae* reveal YDL060w as an essential gene for vegetative growth" YEAST, Vol. 15, No. 15, 1999 Nov, pp. 1691-1701）として既に公知であったと認められる（例えば上記文献ではYDL065C及びYDL110CのプロモーターがkanMX4マーカーに連結されている）。

したがって、請求の範囲に示された上記各遺伝子のプロモーターを用いたそれぞれのポリヌクレオチドに関連した発明に共通する「特別な技術的特徴」は存在しないと言える。

よって、請求の範囲には、2053個の各遺伝子のプロモーターを用いたポリヌクレオチドのそれぞれに対応した、別異の2053個の発明が包含されている。

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